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The U.S. Army Air Corps

PERIODICALLY the United States Army is troubled by the problem of air organisation. The question keeps cropping up whether the Air Corps should be made into a separate Service, like the Royal Air Forces of the United Kingdom and Italy, or should remain a corps of the Army. A few years ago General Mitchell headed the movement for separation so vehemently that he and the Army had to part company. A perusal of his book, *Air Defense*, gave us the impression that the cause which he had adopted was not likely to gain much from the advocacy of Gen. Mitchell. That does not, however, condemn the cause.

Recently a new body known as the Baker Committee has been considering the question afresh, and has decided (Major Doolittle dissenting) that the Air Corps is an auxiliary to the Army in general, such as are the cavalry, infantry, artillery, engineers, etc. The recommendations submitted by officers of the Air Corps were unanimous in desiring an organisation free from the control of the General Staff, but remaining for the present under the control of the War Department. An unpleasant feature of the discussion seems to have been that the ground officers accused the Air Corps officers of seeing chances of better promotion in a separate organisation, while the air party, possibly not the Air Corps officers, but at any rate advocates outside the Service, accused the ground officers of jealousy of the new arm. It does not appear that the Naval Air Service is concerned in the discussion, and from what we can hear we gather that the naval airmen are satisfied with the present position. This reminds us that in 1918 the Royal Naval Air Service did not, on the whole, welcome their transfer from the Navy to the Royal Air Force.

We have no intimate knowledge of the affairs of the United States fighting Services, and we should not presume to advise Americans how to manage their own affairs, but we may offer some observations based on British experience in forming and maintaining a separate Air Force. All the reasons for maintaining such a Force were not apparent in 1918, when, in the stress of war, the R.A.F. came into being. Our main trouble then was that there was some undesirable rivalry between the Royal Flying Corps and the Royal Naval Air Service (mainly in placing orders for machines) and some wasteful overlapping of effort. The R.N.A.S. sometimes contrived to get the better machines, e.g., the Sopwith Triplane. The Army had to borrow squadrons from the R.N.A.S., and it became obvious that a pooling of air resources was a necessity.

Since then other reasons for the present British arrangement have appeared, and these are actually of greater weight than the original reasons which operated in 1918. For us the question of the air defence of Great Britain is of such supreme importance that it cannot be left as a sort of side-show to either the Admiralty or the War Office. This consideration does not apply to the United States. Special work in the British Empire and in lands connected with it, such as Iraq, has been entrusted to the R.A.F., and this so-called air control has worked most successfully. Again, the cases of the British Empire and the United States are not identical.

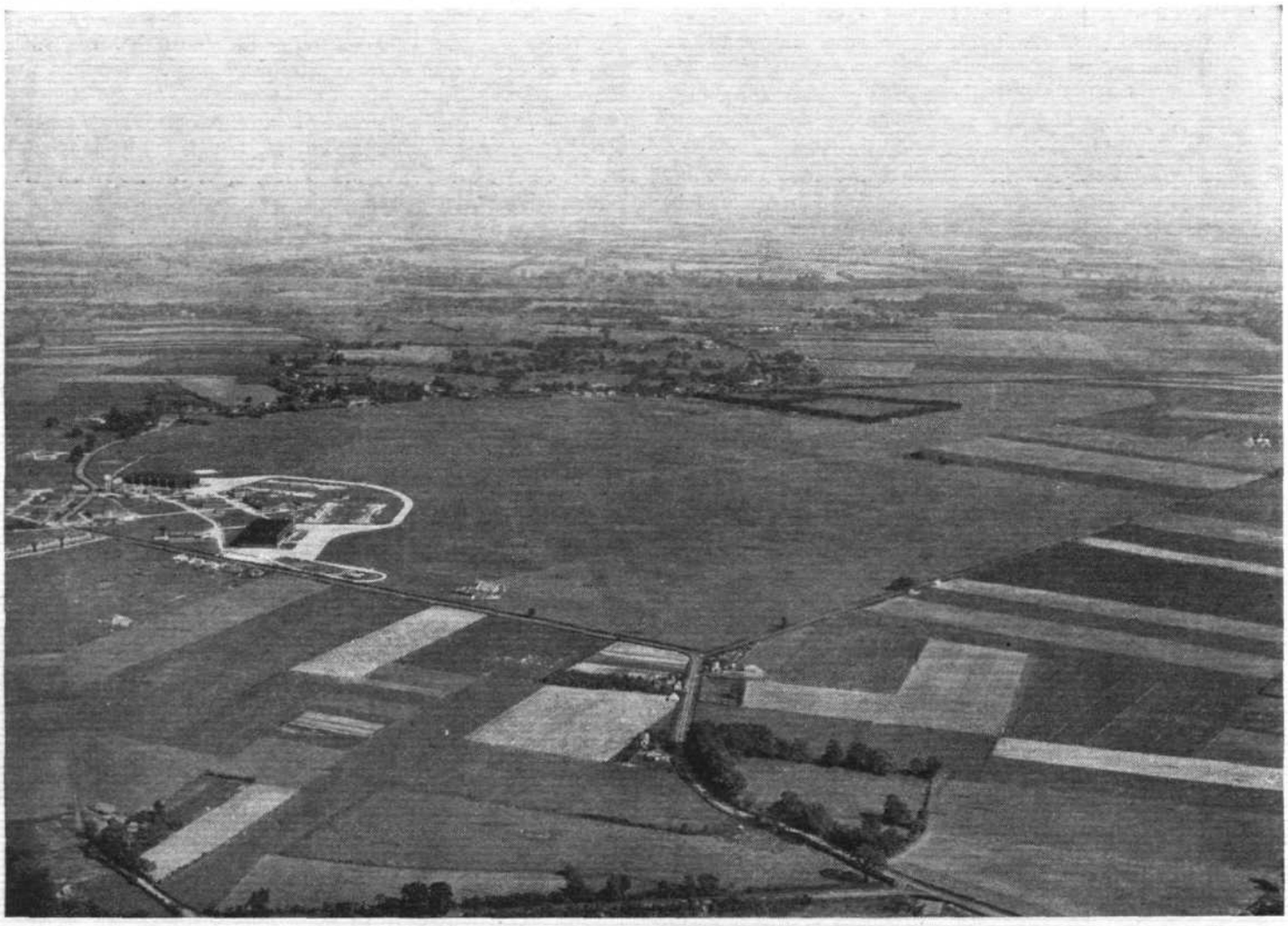
The Air Ministry deals also with the scientific and technical development of aeronautics, with meteorology, with flying training, and with contracts for the supply of equipment. It is a definite saving of effort that one Department of Government should concentrate all these functions in its hands. In this way the evils of rivalry and overlapping are avoided, and a pool is created on which the air arms of the Navy, the Army, and Air Defence and Air Control can, and do, draw. The idea of a pool can, of course, be carried too far, and may prove a hindrance to desirable specialisation; but as regards research, supply, and flying training, it is a good thing. The whirligig of time may bring it about that the Navy and the Army will again possess their own air arms (the painter which holds the Fleet Air Arm to the Royal Air Force has several frayed strands), but

even if that should happen, the Air Ministry, the Air Staff College, and the Royal Air Force will still be necessary—absolutely indispensable—for the British Empire. Whether the same can be said of the United States it is for Americans to judge.

Air Attacks on Warships

THE naval correspondent of the *Daily Telegraph* has stated that a school of thought in the Navy, growing but not yet predominant, holds that future naval campaigns will be decisively influenced, and quite probably decided, by air power. If such a view should prove substantially correct the prospect for the British Empire is gloomy. However much Britons may rejoice at any increased status of aircraft, whether in peace or in war—and there is no stouter upholder of aircraft than *Flight*—Great Britain must stand to lose more than she can gain if her sea power is threatened from any source whatsoever. To take an extreme case: if in the next war British aircraft sank the whole of the enemy's fleet, and the enemy's aircraft sank the whole of the British Navy, we should be left in a parlous condition and should probably have to sue for peace. Our own aircraft could not unaided ensure the safety of our sea-borne food supplies against hostile air attack, could not maintain our communications with the rest of the Empire, and could not escort or convey our Army to the help of an ally or a Dominion.

The point made by the writer mentioned above is that discarded warships should be tested to destruction by air bombing, so that our naval designers could estimate the amount of protection which ought to be provided. We agree that this is very desirable. It is, at the same time, interesting to examine the sources from which air attacks on seagoing vessels can be launched. There seem to be three possibilities: (1) from shore bases, (2) from ships, either carriers or catapults, and (3) from airships. The shore-based aircraft are only dangerous to vessels which come within their range of action. They cannot attack a fleet on the high seas or damage our ocean trade routes, but they may be a very serious menace to warships and food ships in the narrow seas. The power of the ship-based aircraft is still a matter of considerable discussion. The vulnerability of carriers is acknowledged on all hands. One shell on the flying deck would most probably put the ship out of action so far as its functions as an aircraft carrier are concerned. The catapults on other ships would also be very vulnerable to shell fire. There is a considerable possibility that in a naval campaign the aircraft in both fleets would before long cease to be a serious menace to their opponents. There remains the possibility of aeroplanes launched from airships. They would have great range of action, and their airship bases would be immune from all attacks except those of other airship-borne aeroplanes. We have no experience of this form of aircraft and cannot predict their developments. At present the greatest air danger to our fleet and shipping seems to be in the narrow seas.



THE SCENE OF THE GREAT ADVENTURE: Mildenhall Aerodrome, in Suffolk, will be the starting point, on October 20, of the air race to Australia. The aerodrome itself is large, and the surrounding country is flat, and open, so that even the heavily-loaded racing machines should have little difficulty in getting away. (*Flight* Photo.)

The Outlook

A Running Commentary on Air Topics

Messages When Travelling

MUCH is said about the advantage to the business man of travelling by air. It is often pointed out by air line operators that a busy man can be in, say, Paris nearly all day and still get back here to finish off the evening's mail, but apparently the man who wants to arrange for anyone to meet him has to do so before he leaves the ground. An aircraft constructor recently wanted to meet a man down in the West Country within a short while of landing at Croydon on his return from Paris. Had he been able to send a radio message to his own aerodrome he could have had one of his own aeroplanes waiting for him at Croydon and kept that appointment, but he was told he could not send that message, so he either had to charter a special machine on arrival or fail to meet his man. It is now an easy matter to telephone direct to a ship in mid-ocean. The same facilities ought to be offered to travellers on the big air routes.

Non-stop to India

TO-MORROW at dawn—if the plans at the time of writing are successfully carried through—Sir Alan Cobham will leave on the long-distance flight planned to a schedule, and also dependent upon refuelling in the air. Refuelling in this manner is primarily of importance because it enables an aeroplane to carry something like 25 per cent. greater pay load, but, so far, it has not been proved that a sufficiently accurate schedule can be kept so that contact can be made with the "tanker." That the Royal Air Force is undertaking the refuelling at Alexandria and Basra is a significant fact, and points, perhaps, to the importance the authorities place upon a knowledge of this means of increasing the load of long-range bombers. It certainly enables that to be done, and has, therefore, a military value, but whether the difficulty of making contact with the "tanker" will rule out its value for commercial work or not may to a large extent be proved by this flight. If refuelling at intermediate places is shown to be too dependent on good weather then perhaps the scheme may still be used for increasing the load and range of mail-carrying aircraft by fuelling at their point of departure, immediately after taking off.

Simplified Flying

EVERY now and again one hears of an inventor who claims to have produced the "fool-proof" aeroplane. Usually, such claims turn out to be ill-founded, and if one examines the schemes closely, it is discovered that the inventor knows little or nothing of his subject. We *know*, because, unfortunately, we get these inventor chappies calling on us. Often it tests the ingenuity of the staff to think of a tactful way of sending the inventor away without hurting his feelings. Sometimes we are able to resort to the priceless excuse made by a Government official during the war 1914-18. His inventor brought in a scheme for a machine with about twelve engines scattered all over it. The official said that the idea was excellent, but there was such a scarcity of engines that this would rule out the design. The inventor went away contented. Occasionally, *very* occasionally in fact, one does come across an inventor with something really new, and about which the inventor really does know more than anyone else. The classic example is Señor Juan de la Cierva. When he came to this country with his Autogiro he was sorely handicapped by his scant knowledge of the English language, but he did have something new to introduce, and he did know all about it, theoretically and practically. For all that his progress has been slow, but now the Autogiro can definitely be said to have "arrived."

In this issue (p. 989) will be found an account of a very unorthodox aeroplane, the *Pou-du-Ciel*, designed and built by the French inventor Henri Mignet. Controls in this machine are reduced to three: elevator, rudder, and throttle. And even elevator and rudder controls are combined, in that both are operated by the joy stick. There is no lateral control, the machine automatically banking to the correct angle for any turn. Certainly the simplicity is attractive.

Slot or Stagger?

FROM the arrangement of the wings in the *Pou-du-Ciel*, it is a little difficult to make up one's mind whether the machine is to be regarded as a heavily staggered biplane or as a tandem monoplane with the surfaces having a certain degree of slot effect. The inventor claims the latter. In any case, it does not appear that the slot effect is essential to the working of such a wing arrangement. A biplane with a pronounced stagger and a normal gap could be made to work in much the same way, longitudinal stability being attained by having the upper or front wing more heavily loaded than the lower or rear wing, and set at a greater angle of incidence. It would, in fact, be our old friend the Focke-Wulf "Ente," except that the front wing was the main one instead of being quite small as in the "Ente." But that would mainly affect the efficiency and not greatly the stability. How efficient or otherwise the Henri Mignet wing arrangement is we can only guess. His performance figures do not look particularly bad, and obviously there is room for "cleaning up" the machine to some extent, even if the wing arrangement should not, for purposes of stability and controllability, be greatly altered. At any rate, if stalling and spinning can be prevented, a slight drop in top speed is a small enough price to pay for the privilege.

Are Ailerons Necessary?

PERHAPS the most controversial point in the design of the Mignet machine is the total absence of lateral control. For ordinary straightforward flying this probably does not matter. If the machine does wallow a little from side to side, and requires rudder to bring it level, it is perhaps of no great importance. A more serious objection seems to be that a side-slip approach cannot be made, as the machine cannot be side-slipped. To that M. Mignet would certainly reply that this is a "stunt" which the very ordinarily skilled owner-pilot of the future should not be called upon to perform. He may be right. If, as M. Mignet claims, the *Pou-du-Ciel* is under perfect control throughout its speed range, it probably has a large assortment of gliding angles from which the pilot can choose the one which will just get him to the aerodrome, neither more nor less. The remaining objection to the absence of lateral control is that one cannot do "flat" turns. But is it essential to be able to do so? When the direct-control Autogiro first came out, this inability to do flat turns was criticised. But in practice we do not think the objection has proved serious. In his *Pou-du-Ciel* M. Henri Mignet appears to have come closer to the Autogiro than any aeroplane hitherto produced. He cannot descend as steeply, perhaps, nor can he land at no speed at all, but he does claim to be able to land at about 20 m.p.h. That might be sufficient for most purposes.

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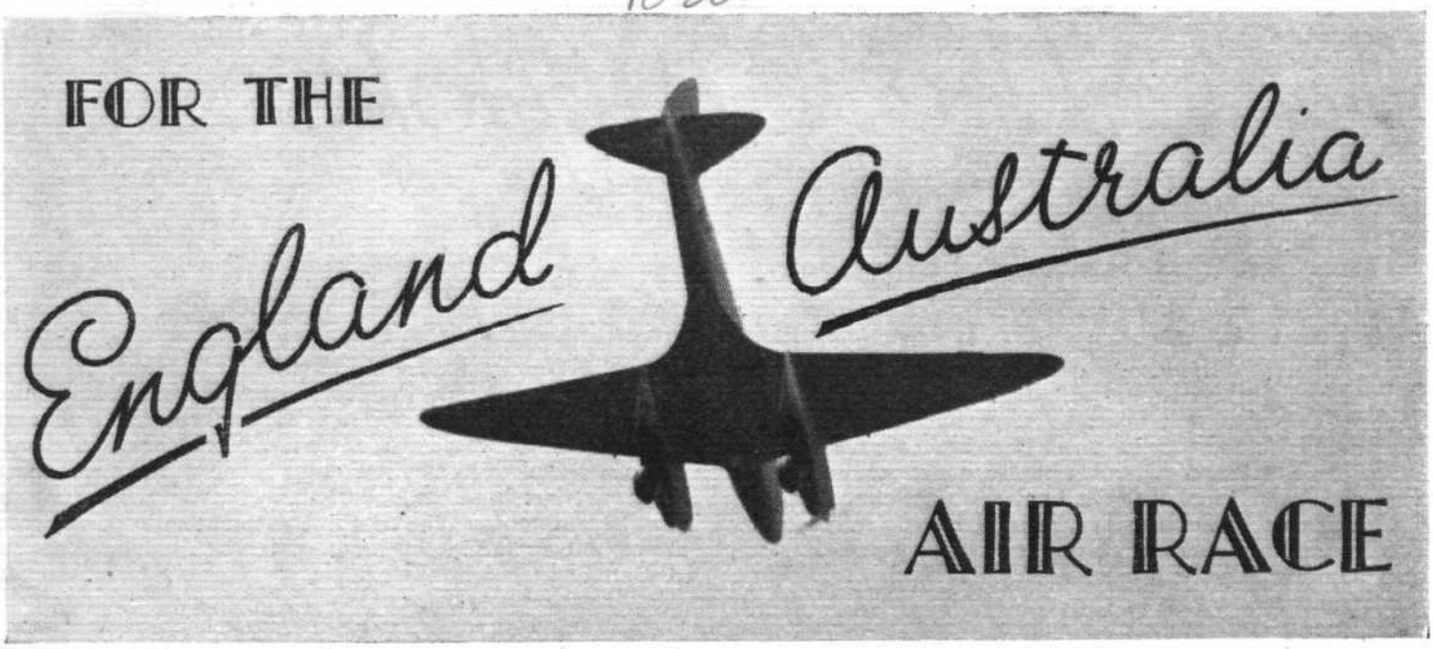

THE DE HAVILLAND "COMET"

Boat-building practice has been extensively adopted in the construction of the machines for the MacRobertson Race

STRESSED-SKIN construction has been used extensively in the new de Havilland machines specially designed and built for the England-Australia Race.

For the benefit of the less technically-minded of our readers it may be pointed out that this expression is applied to a form of wing or fuselage covering which, in addition to giving the component the desired external form, helps also to give it strength. In an ordinary biplane wing, the strength is provided by the primary structure: Spars and ribs; the doped fabric is not taken into account, although it may under certain conditions contribute something to the strength. The "stressed-skin" covering may, of course, be of any material capable of resisting compressive loads, such as wood or metal. When metal is used, it is of necessity applied in very thin panels in order to reduce weight. This means that unless stiffened by some internal framework of stringers or the like, the metal skin will crinkle. When wood is used for the skin, less stiffening is usually necessary because the wood, being much lighter than metal, can be and is used in much greater thicknesses.

In the case of the de Havilland "Comet" the use of a stressed skin was, once wooden construction had been decided upon, forced upon the designers by the fact that

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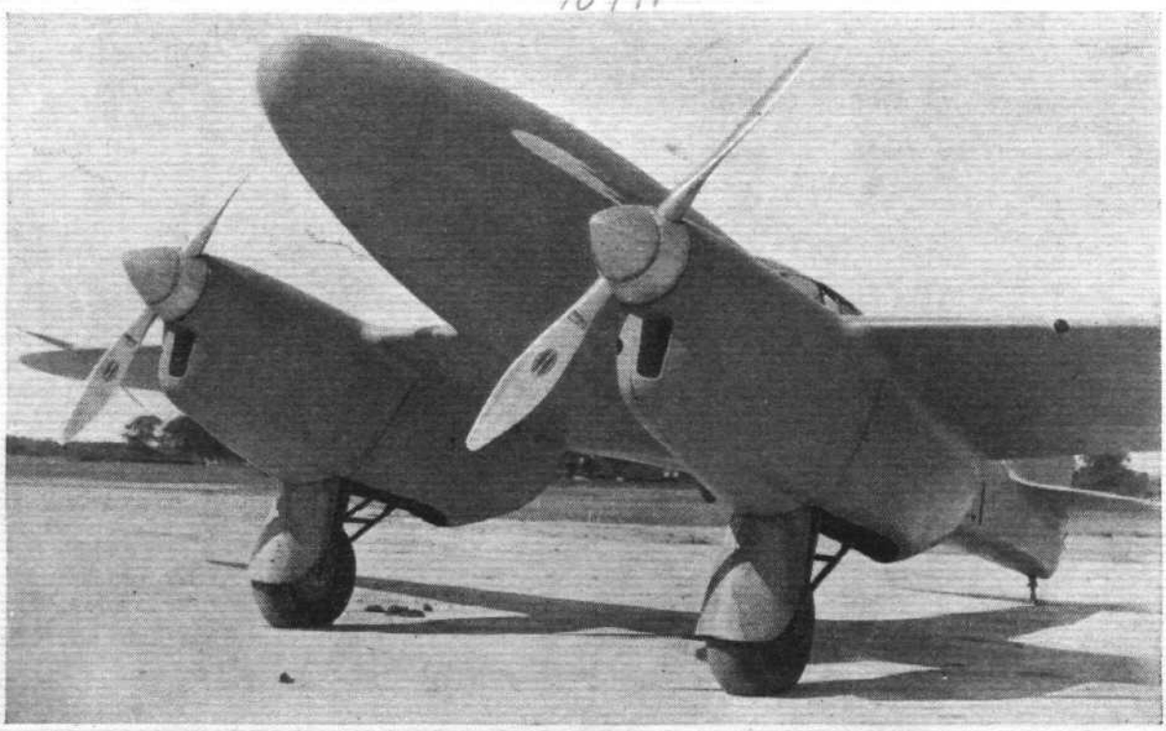
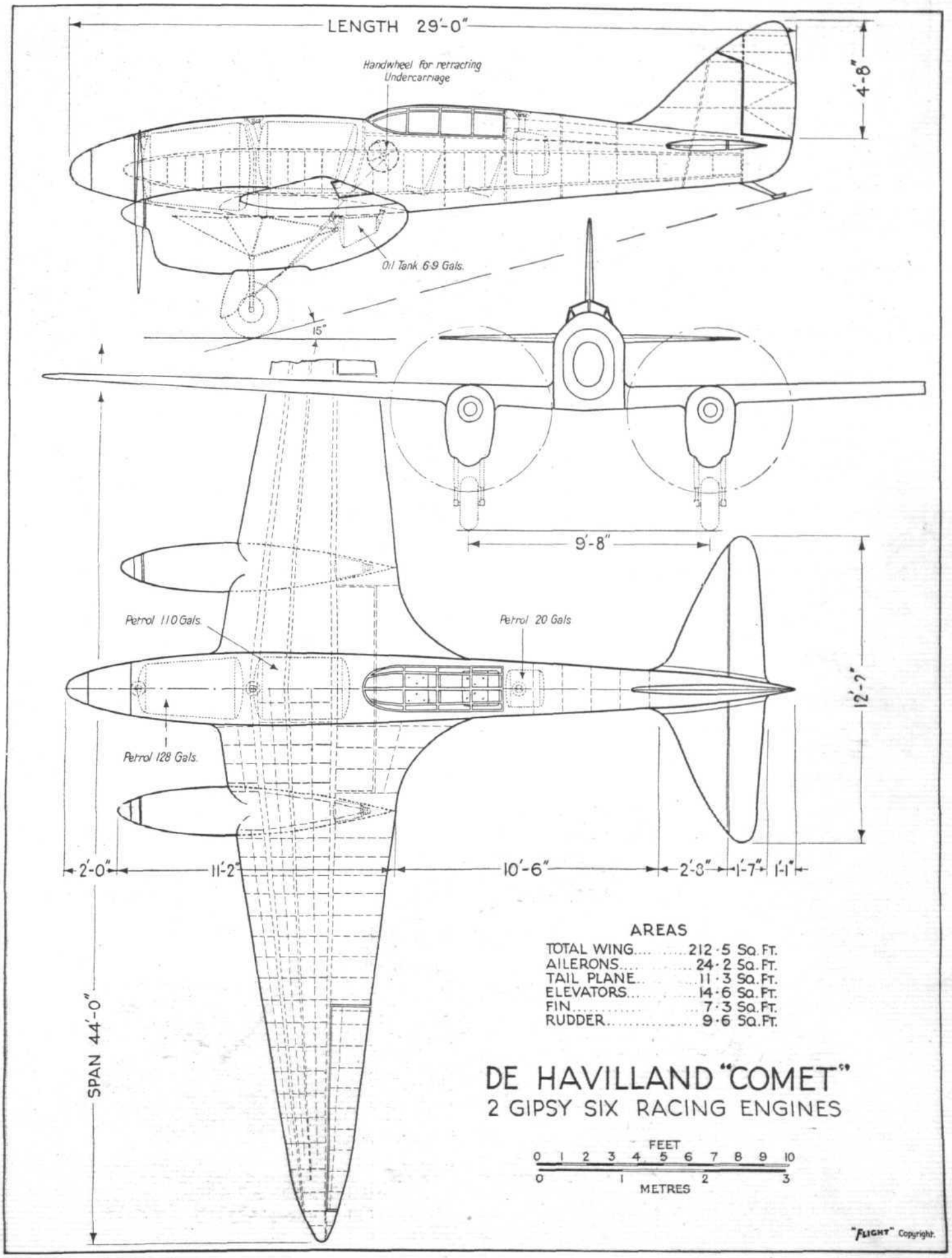
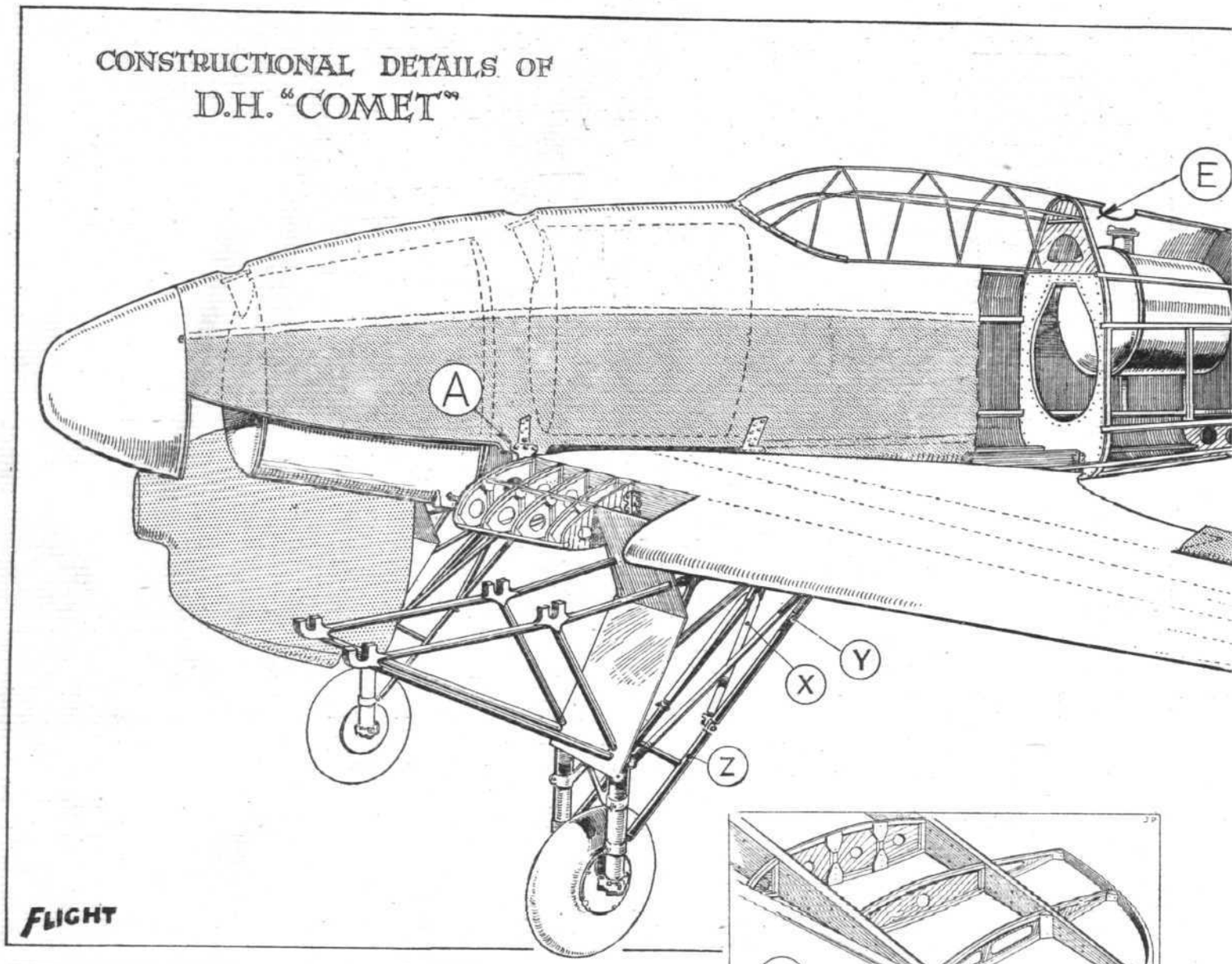


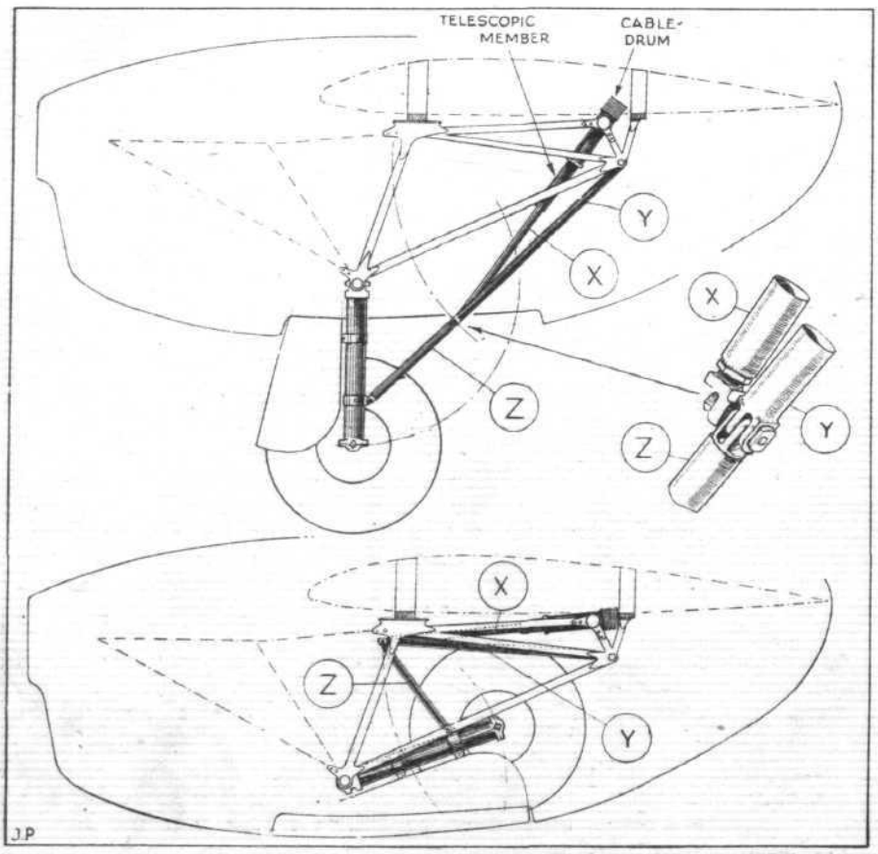
THE BUSINESS END: Note how carefully the engine nacelles are faired into the wing of the "Comet." The wheels retract, and the mudguards form part of the engine cowlings. The engines are high-compression "Gipsy Sixes." (*Flight* Photo.)

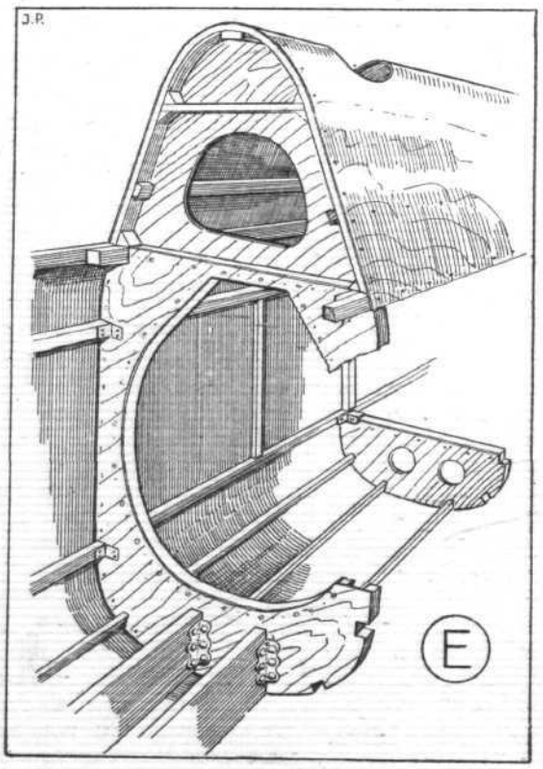


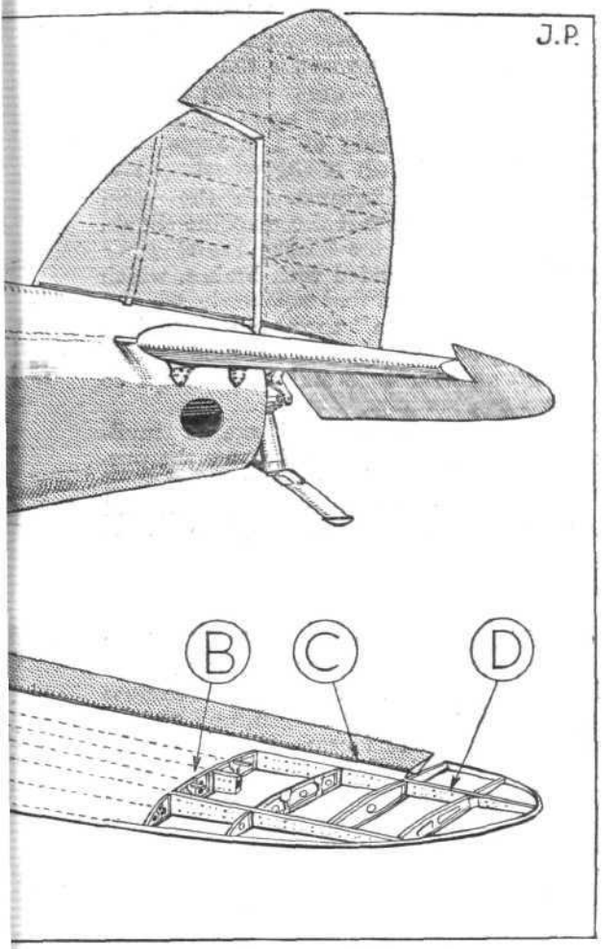
GENERAL ARRANGEMENT DRAWINGS. The three petrol tanks have capacities of 128, 110 and 20 gallons respectively.

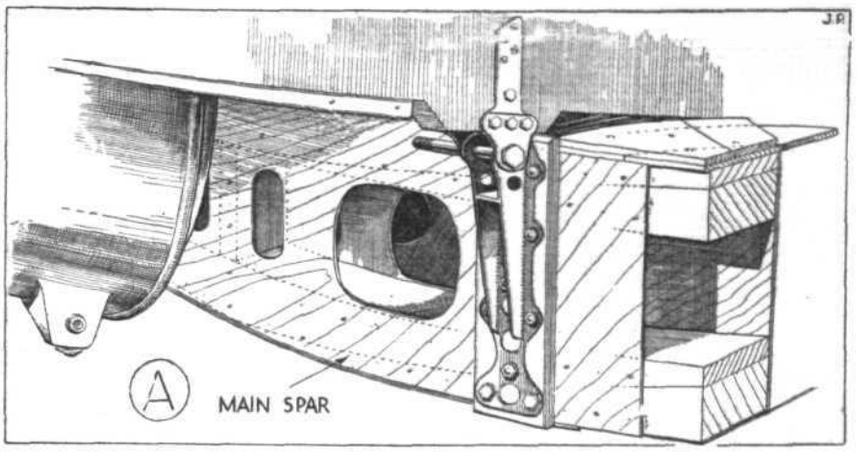
CONSTRUCTIONAL DETAILS OF D.H. "COMET"

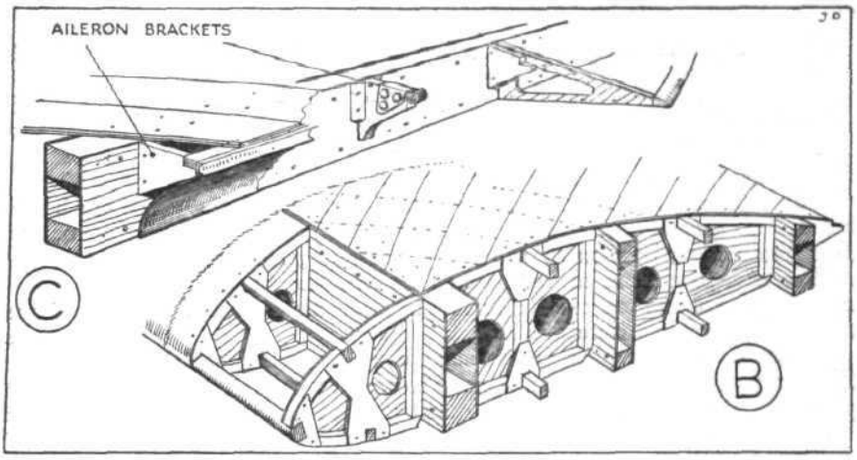












two spars of a size which could be housed in the thin wing-section employed would not have provided sufficient strength, even if they were of solid wood. To obtain the requisite strength the wing covering had to be made of a form which would reinforce the spars. The system finally adopted was one in which certain members having the appearance of orthodox wing spars, and of similar construction, i.e., box-section, are used for taking the shear loads and for transmitting the loads to the covering. Bending and torsional loads are taken by the skin, which is in the form of a spruce planking laid on after the manner of "double diagonal" planking of many lifeboats. That is to say, there is an inner and an outer layer, each composed of spruce strips some two inches wide, the strips of inner and outer layers crossing each other at approximately right angles. The thickness of this skin or planking is reinforced where the stresses are high, such as on the upper surface near the root of the wing, by a third and even a fourth layer, reaching in places a thickness of more than half an inch. At other places, such as at the tips where the loads are small, the planking is only about one-eighth of an inch thick.

Fuselage Construction

For the fuselage a somewhat similar construction has been adopted. The shape is almost a perfect streamline, but not quite. The sides, which are not of great depth, are flat, and there would be no point in using the double-diagonal type of planking for them. Consequently they are covered with plywood in the ordinary way. The top and bottom of the fuselage, however, have a double curvature, and are planked with spruce strip in the same manner as the wing. This is necessitated by the fact that sheet material cannot be bent to a double curvature. It can, to put it in a different way, be bent into the form of a cylinder or cone, but not into the shape of a barrel. The use of diagonal strip planking makes it easy to get a smooth double curvature. The nose and tail fairings of the fuselage are of beaten Electron sheet.

From an aerodynamic point of view the de Havilland "Comet" is interesting on account of the trouble taken to reduce drag to a minimum. The fuselage is, as already mentioned, of nearly perfect streamline form. Its maximum cross-sectional area has been kept down to the minimum which would house the crew, and by placing the cockpit well aft, increasing the fuselage depth slightly behind the cockpit, and using a flatly-sloping windscreen, the break in the airflow caused by this necessary excrescence has probably been reduced to a minimum. The view obviously cannot be as good as if the cockpit were in the nose of the fuselage, but in a racing machine something must always be sacrificed for speed.

The Retracting Undercarriage

The fact that the machine is a twin-engined monoplane has brought with it the almost inevitable use of retractile undercarriages, the wheels of which draw up into the tail fairings behind the engines. A mudguard over the front of each wheel prevents stones, etc., from being flung into the airscrews, and when the wheels are raised this same mudguard forms part of the bottom of the engine nacelle, leaving merely an opening large enough to let the air escape from inside the engine cowling.

Sheet metal fillets are used where the wing joins the fuselage in order to reduce interference and keep the airflow as smooth as possible. The same system has been employed on the tail, fillets being used to run the fin surface gradually into that of the fuselage and tailplane. The rudder extends down to the top of the fuselage only so that in straight flight and for small rudder movements, there is an easy path for the air to follow and eddying is reduced to a minimum. By giving wings and fuselage several coats of paint, rubbing down between coats, and repeating the process, a remarkably smooth surface has been obtained, which by reducing skin friction in such a fast machine should add materially to the speed.

A machine with the aerodynamic "cleanness" of the "Comet" will obviously have a very flat gliding angle, and when most of the fuel has been consumed, so that the wing loading is reduced, it might be a matter of

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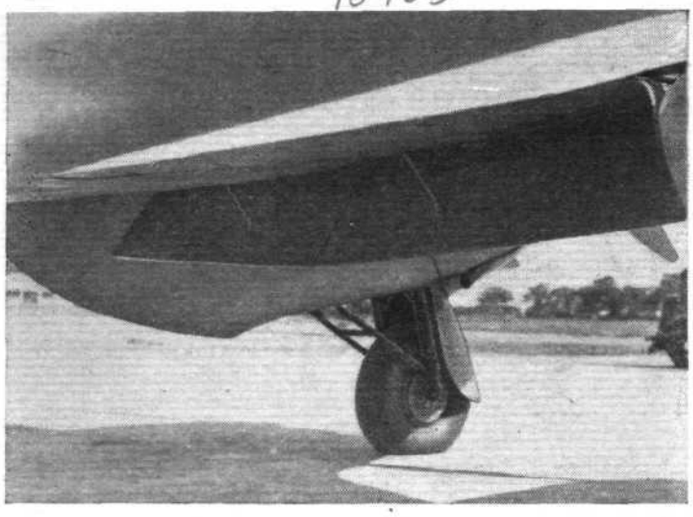

THE AIR BRAKE: This is a trailing edge flap extending from one engine nacelle to the other. It is divided into two halves and operated by levers and a torque tube. (*Flight* Photo.)

some difficulty to bring the machine into a small aerodrome. In order to make this possible air brake flaps have been fitted. These take the form of split trailing edge flaps over the central portion of the wing, extending from one engine nacelle to the other. When closed, the flaps lie snugly against the main wing surface. They are operated by a simple torque tube and levers.

Designed for long-range flying (the distance from London to Baghdad is about 2,550 miles), the "Comet" is provided with very large petrol capacity. The three tanks are all carried in the fuselage, one of 128 gallons capacity in the nose, another of 110 gallons capacity approximately over the centre of gravity, and a third, of 20 gallons, just aft of the cockpit. The latter tank is used for trimming purposes. As petrol is consumed the forward tank begins to empty, and to keep the machine from being tail-heavy a small quantity is taken from the rear tank, which is farther from the c.g., and therefore works on a longer "leverage." In addition, the elevators are provided with a spring-loading device for trimming purposes. The tail-plane itself cannot be adjusted for incidence.

The "Office"

Accommodation is provided in the cockpit for a crew of two. They are seated one behind the other, and have dual controls so that they can take turns at piloting. A well-equipped instrument board is placed in front of the forward seat, and can be seen, by craning slightly, from the back seat also. The flying controls are of the usual type, with a plain "stick" for elevator and ailerons. A large wheel to the right of the front seat operates the undercarriage retracting gear. On the left is a lever which operates the air brake flaps fitted under the central trailing edge portion of the wing. Wheel brakes are connected to the rudder bar for steering on the ground. A transparent roof over the cockpit encloses the occupants.

Flying control surfaces are of usual type, with a form of Frise aileron operated by the patented de Havilland differential method. The ailerons are mass-balanced by lead distributed along the leading edge of the aileron. Rudder and elevators have the usual bob-weight mass balances. In the rudder and elevator controls a mechanism has been inserted to give a very low gear ratio at small angles of movement of the control surfaces and an increasingly greater ratio for larger movements. This has, of course, been done in order to provide lightness of control and eliminate violent response to small movements of the controls at high speed.

Engine mountings and undercarriage attachments form almost the only metal parts in the "Comet." Welded steel tube construction is used for the engine supports, and the undercarriage wheels are carried on steel forks with telescopic limbs. The wheels are raised and lowered by a worm gear, or rather by the use of "overgrown" bolts and nuts, the "nuts" forming cable drums for the operation of the gear. Thus when the "nuts" are rotated by cables from the cockpit, they draw the "bolts" upwards, shorten one member, which forms one side of a triangle, and thereby raise the triangle and with it the wheel. The movement is explained in two diagrams. As the worm gear is self-locking, no danger arises if the machine should land with the wheels not quite in the "fully down" position. The Dunlop wheels are provided with brakes, which can, as already mentioned, be operated separately *via* the foot bar. They can be locked "on" together for parking. Instead of a tail wheel there is the usual tail skid, which is thought to offer less air resistance and which helps to pull the machine up when landing.

The power plants fitted in the "Comet" are de Havilland "Gipsy Six" engines, specially modified for the purpose of the MacRobertson Race. By using a modified cylinder head, valve rocker gear and piston, the overall height of the engine has been slightly reduced, the compression has been raised from 5.25 to 6.5, and the engine works satisfactorily on standard service fuel to D.T.D. 224 specification.

In order to take advantage of the use of the Hamilton controllable pitch airscrews fitted, the normal speed of the engine has been increased to 2,350 r.p.m. At the maximum of 2,400 r.p.m. the engine develops 224 b.h.p. on the bench. In the air this is slightly increased owing to the small degree of "boost" obtained by the high forward speed of the machine. A new crankshaft has had to be made to get an appropriate hub fixing for the Hamilton airscrew. The high pressure required (about 100 lb./sq.in.) to operate the pitch control of the propeller is obtained from the usual engine pumps through duplicate oil relief valves. It does not affect in any way the normal lubrication system. The standard arrangement of alternative hot or cold air supply for the carburetters has been retained in case adverse weather conditions are encountered during the race. Warm air, if required, is taken from the vicinity of the cylinders through a flame trap.

A special coupling is provided on the rear end of the crankshaft for driving a rotary vacuum pump used to operate the Sperry gyro compass.

Data

But few data relating to the "Comet" are available. The dimensions and areas are shown on the general arrangement drawings. The gross weight is in the neighbourhood of 5,250 lb. As the quantity of fuel carried is 258 gallons, a little "guessing" puts the tare weight, fully equipped, at something like 3,000 lb. Should this be approximately correct, the ratio of gross to tare weight is 1.75. In other words, the machine carries 75 per cent. of its own weight.

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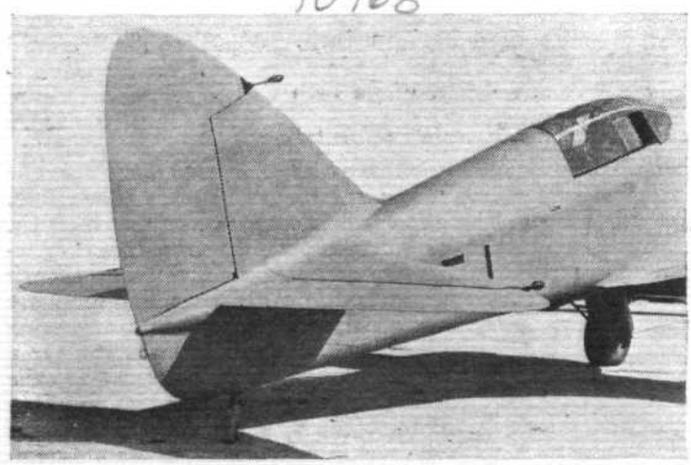

CANTILEVER TAIL SURFACES: A tail skid is used instead of a tail wheel on account of its smaller drag. It is fully castering, and helps to shorten the run after landing. (*Flight* Photo.)

pic on facing page (advert) is reg 10153.

PRIVATE FLYING

A SECTION FOR OWNER-PILOTS AND CLUB MEMBERS

NOTES
by
LORD SEMPILL
A.F.C., F.R.Ae.S.

MY experience during a recent week-end tended to emphasise the fact that private flying is resolving itself generally into three categories involving the use of (1) the fixed wing type of aircraft; (2) the rotary wing or autogiro; and (3) the motorless machine. Two of the foremost exponents in categories (2) and (3), Mr. R. A. C. Brie and Herr Kronfeld, accompanied me north en route to the opening of Ulster's first airport at Newtownards. Both have played a great part in the development of their own particular branch of flying, and, of course, they are each experienced aeroplane pilots. Bearing this in mind, I thought that, on this flight, I would take the opportunity of sitting in the back seat of my "Leopard Moth" for a change and discussing gliding matters with Herr Kronfeld, whom I had not seen for some time. With this in view, I suggested to Mr. Brie that he should take the pilot's seat on the first section of our journey—from Hanworth to Skeldon, where he was to pick up the C.30 Autogiro which he had arranged to demonstrate at the opening of the aerodrome at Ards. It was Brie's answer to this invitation which drew my attention to the growing tendency to classify mentally the essential advantages of particular group types of aircraft. Whilst thanking me for the suggestion, he said that he hoped his flying days would continue to a ripe old age, and that to ensure this he had made up his mind, as a pilot, to confine himself to the Autogiro. There is no doubt that Mr. Brie has been, and is, doing wonderful work in this particular phase of development. His enthusiasm for the Autogiro is most refreshing, and the increasing popularity of this type is not a little due to the zeal with which he demonstrates its possibilities. On arrival at Skeldon, Herr Kronfeld transferred to the Autogiro, and we flew on to Newtownards, where Brie later gave a very entertaining exhibition of the latest "direct" control type.

Our Air-minded Air Minister

The opening of the new Ards Aerodrome serves again to direct attention to the thoroughness with which the present Secretary of State for Air tackles his job. To-day, when there is a good deal of doubt in the minds of many as to the wisdom of Air Ministry control of civil aviation, it is encouraging to note the enthusiasm with which Lord Londonderry endeavours, by personal example, to spread the gospel of air-mindedness, a state of mind which must permeate the body politic if civil aviation is to develop as it should. Not only has the Secretary of State learnt to fly during his present term of office with this object in view, but his interest in flying is shared by his family in no less degree.

The first civil aerodrome in the North of Ireland, which is situated on their own land, was prepared through the direct initiative of Lord and Lady Londonderry in co-operation with that enterprising concern, Airwork, Ltd., and when fully developed it may be one of the largest and most important in Great Britain. After the opening ceremony, which was followed by an interesting display of flying witnessed by a large gathering of people, Lord Londonderry took the opportunity of extending his experience of the air by flying back in the Autogiro to his home at Mount Stewart, where he has a landing ground. So impressed was he with its possibilities that he expressed his intention of taking an early opportunity of qualifying as a pilot of this type. His daughters, Lady Helen and Lady Mary Stewart, also had a flight, and were only disappointed that the machine was not fitted for dual control.

Gliding at Sutton Bank

AFTER leaving Ulster we flew to Sutton Bank to attend the opening of the annual Soaring Competition organised at this new site in conjunction with the British Gliding Association. Herr Kronfeld, who has probably had more experience of motorless flight than any other man in the world, was much impressed by the possibilities of our new National Soaring Centre. Unfortunately, weather conditions were not particularly good on the opening day, so that Herr Kronfeld was not able to see how greatly our leading exponents of soaring flight have progressed since he last demonstrated to us his great all-round knowledge of the art. Motorless flying in Great Britain has gone through many vicissitudes in recent years, although there has been a continuous interest displayed by a faithful band of enthusiasts. In spite of many difficulties a suitable site for soaring has been obtained and organised on sound lines. The wonderful German site at the Wasserkuppe was the ideal aimed at, and, although Sutton Bank may not have all the natural advantages of the former, it is hoped to develop it as a soaring training centre on a comparable basis. Really good environs, both for gliding and soaring, are not very common in this country; and although certain parts of Scotland might afford better natural facilities, they would not generally be of convenient access. The 1934 competitions at Sutton Bank were entered upon this year under much more favourable auspices. The Air Ministry had expressed their intention of making an annual grant of £5,000 to the controlling body of Gliding and Soaring, and new life has been put into the movement. The attendances at the Sutton Bank meeting in particular have proved that motorless flying as a spectacle has a distinct appeal to the public, provided it is held at a spot within easy each. It had been hoped that the facilities at Sutton Bank would enable those British pilots who had already achieved very creditable results to rival the performance of their foreign colleagues, and the meeting has in some respects justified this hope. The British duration and height records have been substantially raised during the meeting. The duration record proves the suitability of the site for this type of soaring, as it was achieved by a machine of obsolescent design. The height record was obtained as a result of utilising conditions particularly suitable for thermal soaring. There is no doubt that the British Gliding and Soaring movement is entering on a phase of successful achievement.

Private Flying

HERTS AND ESSEX AERO FETE

MEMBERS at Broxbourne, the home of the Herts and Essex Aero Club, not only laid themselves out for enjoyment but also to enable their guests to enjoy themselves on Saturday last. The thunderstorms which created so much havoc in various parts of London interfered with the programme considerably, but, nevertheless, the afternoon was certainly enjoyed by everyone. There was not much flying. A few demonstrations like those of the Monospar by Capt. Rex Stocken and a race, ably handicapped by Mr. Rowarth. The result of this latter event was a win for Mr. R. Duncanson in the Hendy "Hobo" (Pobjoy). Mr. Duncanson used to be the instructor at Broxbourne before Mr. Frogley took over, so the result was a thoroughly popular one. The "Hobo" is the same machine which, although it landed at Reading and refuelled during the last King's Cup Race, still had speed enough in hand over its handicap to get fourth place in its heat. On Saturday the result was naturally not such a runaway and the pilot did not get in front of all the others until just before the finish; in fact he only beat Mr. D. Kinnear, the instructor of the L.G.O.C. Flying Club, in a "Moth" (Gipsy I), on the post. After the race Mrs. Pollard presented the cup, donated by her husband, to Mr. Duncanson. After the official opening by Mr. Gene Gerrard, the crowd around the clubhouse dispersed to try their skill at every form of side show from shove-halfpenny to coconut shies until the time came for refreshment, when the club's kitchen staff successfully coped with, and satisfied, the large demand for their wares.

LIGHT ENTERTAINMENT AT READING

ORIGINALITY always marks the meetings, shows, at homes, or whatever they may be called, organised by the Reading Aero Club. Last Sunday they held a party and apart from an outburst of "youthful exuberance" on the part of flying instructor Lawn there was no flying at all. Lawn proceeded to turn one of the school's "Hawk" aeroplanes, "inside out." He flicked rolled it, inverted it, and threw it about in a manner which left no doubt in the mind of anyone as to its manœuvrability. When he landed his passenger stepped out and almost looked as if would like some more! The main attraction of the afternoon was a Treasure Hunt which took place after an arrival competition for the visitors arriving both by air and road. The prize for those flying was won by Mrs. Barnes and for those driving by Mr. Radice. The Treasure Hunt had been arranged by Mr. Richard Ovey with the connivance of Mrs. Powis and the suggestion of the competitors—after they had been stuck at the wrong cross roads for a long long time—that Mr. Ovey should conduct a series of lectures throughout the winter, on the geography of the Reading district, has been logged for further consideration. After meeting at "Lone Trees," grovelling in gravel, and chasing sticklebacks, Mr. Tindall and the crew of his car won by a "bumper bar" from the runner-up.

On the previous Sunday only one pilot—Mr. R. Y. Bush, of Brooklands—got through to win a free breakfast out of 15 raiders who attempted to avoid the Dawn Patrol. Other points of interest during the past week include the delivery of a "Hawk Major" to Mr. M. Lacayo, who has recently acquired the "Hawk" agency, and a great deal of cross country work by Mr. Woods, who is planning to fly his "Hawk" to Rhodesia at the end of the month. The Barnes Cup Competition closes on September 20th, and the Cup will be presented by the donor on the following Sunday.

Danger Areas

It has been brought to the notice of the Air Ministry that pilots of aircraft are ignoring the warning regarding the danger area which is described as "River Esk (near Barrow in Furness)" on page 21 of the Air Pilot (Volume I), and is also shown on the Civil Air Edition Maps.

Apart from the risk of accident to aircraft, any neglect of the warning interrupts the firing programme. The attention of all pilots is drawn, therefore, to the necessity of avoiding all danger areas shown on the Civil Air Edition maps and described in the Air Pilot (Volume I) and in Notices to Airmen.

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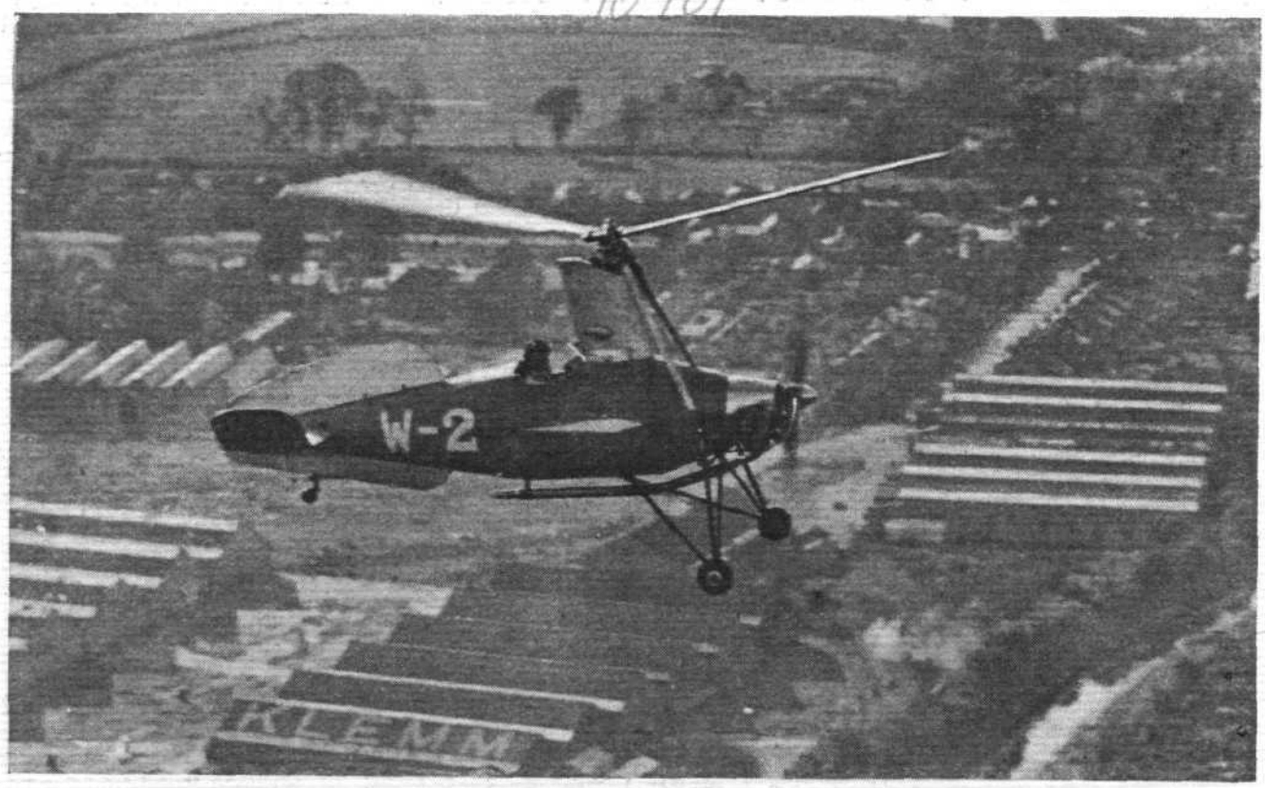


WEIRD AND WONDERFUL: A striking aerial view of the experimental Weir Autogiro, "W-2," flying over Hanworth. Note the unusual wing-section of the wings which are not there!
(*Flight* Photo.)

FROM THE CLUBS

Events and Activity at the Clubs and Schools

MIDLAND

Flying times for last week amounted to 34 hours dual and 30 hours 30 minutes solo, Mr. J. Wilkinson making a successful first solo. Cross-country flights were carried out to Heston and Desford. Mr. G. S. Davison has become the owner of a Monospar.

CAMBRIDGE

The last fortnight has been an exceptionally busy one at Marshall's Flying School. Two new members joined, Messrs. Sleigh and Whittet, and Mr. E. Longley completed tests for his "A" licence. Cross-country and navigation flights have been made to Serck, Birmingham, Spalding, Sardney, and Heston.

LEICESTERSHIRE

An "At Home" will be held at Desford on Saturday, September 29, at 3 p.m. The Lord Mayor and Lady Mayoress of Leicester have consented to be present, and a number of interesting machines will be demonstrated during the afternoon. It is possible that formations of R.A.F. machines may visit the aerodrome.

BALDONNEL

The Irish Aero Club has not had too busy a week, although over fifty members have been present daily over the week-end. The club has done 18 hours dual instruction and 8 hours solo work, including some cross-countries. Two new flying members have joined, Mr. T. Watkins and Mr. F. Roche. Mr. C. J. Croee has taken his licence after six hours dual instruction and four hours solo work.

BROOKLANDS

Fine weather during the past week has resulted in all instruction machines being in constant use—80 hours solo and 44 hours dual. Messrs. Mountfort, Vora, and Ashley have completed their "A" licences. Forty students from the College of Aeronautical Engineering at Brooklands have gained their "A" licences. A notable visitor during the week was Col. Hubert Juilian, who landed on his way to Le Bourget.

NORTHAMPTONSHIRE

Flying times for the past week have totalled 25 hours, a first solo being successfully carried out by Mr. W. S. Abbott, while three previous first soloists have now nearly completed their hours for their "A" licences. Miss U. Waldron has joined as a flying member, and has commenced taking instruction. Several cross-country flights were carried out by members, the longest of which was made by Mr. F. R. Wilson, who left Sywell for Renfrew.

Three machines from the Sussex Aero Club visited Sywell during the week, while other visitors included machines from Brooklands, Desford, Castle Bromwich, and Tollerton.

HATFIELD

Fine weather last week brought out many of the London Aeroplane Club members, and the club was the scene of great activity, all the machines being in use every day. The flying time for the week was 114 hours 55 minutes. Among new members who have joined the club recently are Mrs. A. Leigh-Brown, from Australia, Mrs. M. I. Rae, Messrs. Wallace and H. Zetterson, and Mr. J. M. H. Hoare, who has just returned from India, has renewed his active membership with the club. Mr. Hoare has been associated with the de Havilland Company branch in Karachi. A first solo flight was made by Mr. A. Maconochie, and Mr. R. C. Carr completed his "A" licence tests.

NORFOLK AND NORWICH

Flying activities last week were well above the average for this time of the year, the total flying time being 55 hours. This included cross-country flights to Hull, Hendon, Tunbridge Wells, and Hatfield. Mr. A. Augood—the winner out of seventy entrants for the flying scholarship presented by Mr. H. N. Holmes (of Edwards and Holmes)—completed tests for his licence during the week, as did Mr. J. Culliford, of Taunton School, and Mr. D. E. Gillam, of Wrekin College. All attending the Public Schools Aviation Camp have, therefore, now qualified as pilots. On Saturday next the club will be holding its annual garden party, and have invited the Women's Engineering Society, who are holding their conference in Norwich. The annual ball will take place on Friday, November 2. Boulton and Paul have kindly placed their spacious hangar adjoining the club house at the disposal of the club for this evening.

WITNEY AND OXFORD

Last week's flying time totalled 29 hr. 50 min., including 9 hr. 45 min. dual and 20 hr. 5 min. solo. Mr. H. F. R. Sewell made his first solo during the week.

NEWCASTLE

The club will be closed for staff holidays from Saturday evening, September 29, until Sunday morning, October 14. The aerodrome, however, will be open for the convenience of visiting pilots, and petrol and oil can be supplied.

SOUTHERN

Club members have flown 18 hours dual and 24 hours solo during the fortnight ended September 15. Both Mr. Ferguson and Mr. Champneys passed their "A" licence tests. The boundaries of the Shoreham aerodrome have now been marked clearly with white-and-red painted battens placed at regular intervals.

CORK

The Irish Free State Minister for Industry and Commerce has granted the Cork Aero Club a licence for an aerodrome which is situated at Farmers' Cross, a quarter of a mile east of the Cork-Kinsale road. No hangars have yet been erected, and the club machines, which use the aerodrome on Tuesdays, Wednesdays, Fridays, and Sundays, are kept in the hangars of the Army Air Corps aerodrome at Fermoy.

YORKSHIRE

A total of 38 hours was flown on club machines last week, R. B. Whitworth, of Halifax, obtaining his "A" licence. Cross-country flights were made to Le Touquet, Liverpool, and Blackpool. Mr. and Mrs. J. R. Micklethwait are now touring Spain in their "Gipsy Moth," while Messrs. W. L. Hey and G. W. Garnett have flown to Hungary in their "Puss Moth" to take part in the Rally there. Mr. C. H. Wood, of Bradford, is a new associate member.

CINQUE PORTS

The total flying for the past week, including two hours' night flying, was 74 hr 30 min., and in all probability another machine will be added to the club fleet to cope with increase of work. First solos were made by Mr. R. H. Riggall, while Miss J. St. Claire and Mr. T Adam successfully passed their "A" licence flying tests. On Saturday, September 22, a party of twelve to fourteen Germans from Cologne, who were very disappointed at not being able to attend the International Meeting, September 1 and 2, are visiting the club. If they arrive in time the club is taking them up in formation to Brooklands to see the 500-mile race, after which the formation will be swelled by Brooklands pilots who will return to Lympne for the week-end. Georges Seversky has been staying the week-end at the club, and hopes to come over on the 22nd with Sandra Swenska to entertain the Germans.

AIR SERVICE TRAINING

The completeness and variety of the equipment possessed by A.S.T at Hamble is one of the things which surprise many of the visitors, and it is easy to understand why even the most skilful pilots return again and again to keep up with the march of aviation's progress. For instance, Sir Alan Cobham has, in the past month, taken a course in aerobatics.

New pupils appear from all parts of the world, and Hamble graduates are to be found to-day in every country where aviation is practised. Some of the latest arrivals are Messrs. Cassel, Nock and Febo Schetty, the last-named from Switzerland, who are qualifying for their "A" licences; Mr. W. N. Law, for his "B" licence; F/O. R. C. Parker, for an instructor's course; and Capt. R. W. Hogg, for a radio telephony course Dr. S. G. Galstaun and M. K. Dubash, from India, have been awarded A.S.T. certificates for instrument flying. M. C. Basiaux has returned to France with his Comper "Swift" after a course in aerobatics, and Mr. E. Esmonde, having completed his course of instruction, has been appointed a first officer with Imperial Airways. He is the third graduate of A.S.T. to obtain one of these appointments.

An addition to the team of instructors is F/O. L. W. Howard, who was previously instructor at the Wiltshire School of Flying.

One of the machines has been fitted with a Sperry artificial horizon and directional giro, so that students will have an opportunity of studying the actions of these instruments in addition to those normally used for the course.

THE FOUR WINDS

ITEMS OF INTEREST FROM ALL QUARTERS

Japanese Formation Flight

Eighty aircraft attached to the Japanese Fleet will make a formation flight to Mukden, Hsinking, Kirin, and Harbin today (Thursday).

A Japan-China Flight

The Japanese newspaper *Asahi*—an extensive user of aircraft in its business—recently carried out a flight from Osaka to Peking, as part of a commemoration of the tenth anniversary of the flight by the *Asahi's* machines from Japan to Europe *via* Siberia. The machine, designed and built in Japan for newspaper work, was flown by Mr. Masaki Iinuma, who was warmly welcomed by Chinese officials on his arrival at Peking.

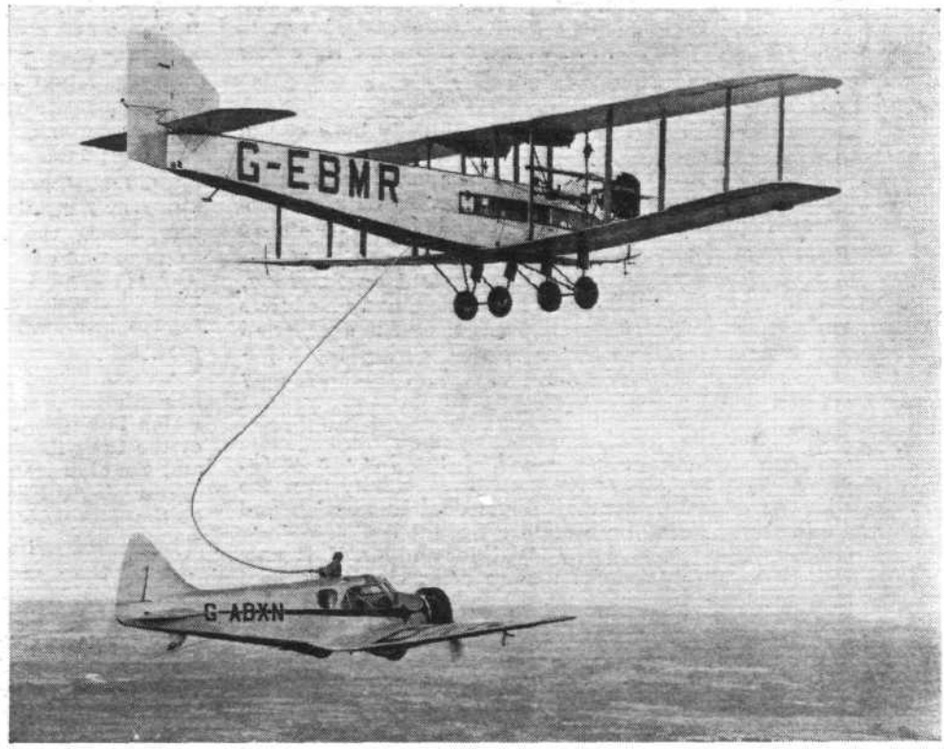
Across Australia in 9½ Hours

Leaving Perth at 4 a.m. on Tuesday, September 11, Air Com. Sir Charles Kingsford Smith, in his Lockheed "Altair," took 9 hr. 32 min. to reach Sydney. The distance covered was 2,175 miles, and the average speed was about 230 m.p.h. The "Altair" will be flown by "Smithy" in the MacRobertson race if the trouble which has arisen over the airworthiness of the machine, when fully loaded for long-distance flying, can be overcome.

Twenty-five Years Ago

From "Flight" of September 18, 1909.

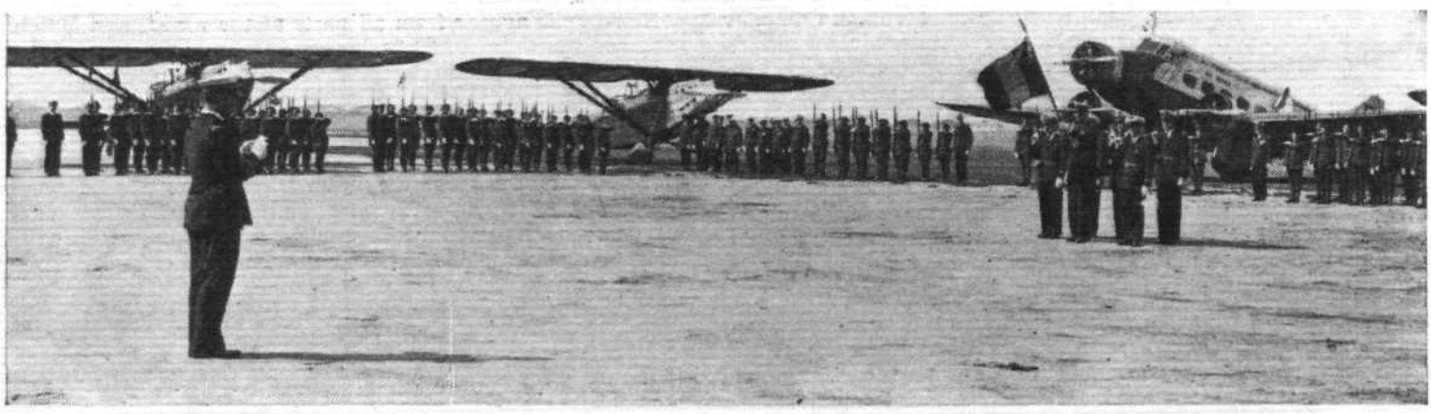
"With regard to Mr. Cody's intention to attempt to fly between London and Manchester, Mr. Brock, of the well-known firm of firework manufacturers, has suggested that the route should be marked by clouds of coloured smoke from shells sent up at various points to a height of 300 ft. Mr. Brock has drawn up a provisional code of colours . . . and suggests that shells should be fired at each point until the aeroplane passes, when the next point would take up the work."



PRACTICE MAKES PERFECT: Sir Alan Cobham carries out a refuelling test at Portsmouth in preparation for his forthcoming non-stop flight to India with Sqd. Ldr. Helmore in the Airspeed "Courier." The "tanker" seen above is Sir Alan's Handley Page W.10 (ex *City of Pretoria* of Imperial Airways).

Stack Busy

On Saturday, September 8, Capt. Neville Stack broke by 50 min. his own record for the London-Copenhagen and return flight. On his former attempt, in May, 1931, his time was 11 hr. 40 min., and his average speed for the 1,400 mile journey was 124 m.p.h. On his recent trip, for which he used a Miles "Hawk Major" ("Gipsy Major"), Capt. Stack rested for 45 min. at Copenhagen before making the return trip to Heston. The "Hawk Major" had tankage for a range of 1,500 miles and a cruising speed of 140 m.p.h. Capt. Stack described the conditions over the North Sea as "not too good." On September 16 Capt. Stack attempted to break the London-Prague and back record. Twice he was beaten off his course by storms and was forced to give up the flight, and to land at Brussels. He described the flight as "the worst he had ever experienced." On his return journey he struck a colossal thunderstorm over mountainous country and, to use his own words, was "tossed about like a piece of paper." Between Brussels and the coast he flew into a dense fog which forced him to turn back and to land at Brussels. Capt. Stack is making a series of these flights as training for the MacRobertson race, in which he will fly an Airspeed A.S.8.



IN MEMORY OF GEORGES GUYNEMER: A ceremony was held at Le Bourget aerodrome on September 11 in memory of Georges Guynemer, the famous French war ace, who fell in Flanders on September 11, 1917.

SMALL AND SPEEDY: The *Tilbury Flash*—probably the smallest racing aeroplane in the world—which took part in the National Air Races at Cleveland, U.S.A. Seated in the machine is pilot Clarence MacArthur, while Mr. Tilbury is standing beside it.

Aeroplane Discovers Alpine Tragedy

An aeroplane which was being used to search for a party of climbers missing on the Schüsselkar peak in the Bavarian Alps found the bodies of the seven members of the group in two crevasses where the victims had fallen.

Grierson on Way to New York

Flying in his D.H. "Fox Moth," now equipped with a land undercarriage, Mr. John Grierson left Ottawa, where he has been staying with the Royal Canadian Air Force, on September 11 for New York, which he reached safely the same day. As New York possesses no Customs airport, he was forced to land at Albany for clearance.

Stemming the Locust Plague

It was pointed out during the third International Locust Conference, at the House of Lords on September 17, that it was generally accepted that the use of arsenical compounds in the form of poison baits, dust, or spray, was the most efficient, cheap, and convenient method for destroying locusts, although the method had certain disadvantages. It was stated that valuable results could be obtained by the use of aircraft for distributing sodium arsenite dust over swarms resting in trees or on the ground, where this could be done without risk to live stock and crops. The delegates agreed that it was desirable that further experiments should be made to develop the use of aircraft against locusts.

As the Crow Flies

The possibilities of flapping-wing flight continue to enthrall inventors, and in a cinema newsreel last week were pictures of a German flying a compressed-air model of this type. It certainly flapped and flew—but what a shaking-up the pilot of a full-sized one would have had!

Wireless Messages to Glider

At Dunstable on Sunday last, Mr. G. E. Collins, of the London Gliding Club, holder of the British distance gliding record, received wireless messages while making a flight in a glider. Mr. Collins was unable to reply as he had no transmitter.

A Parachute Thrill

When Mr. B. H. Turner attempted a parachute descent on the projected Kingston and Surbiton Aerodrome last Friday, he landed on the top of a cage containing two lions in Chessington Zoo nearby. After frantic efforts to grab his legs the lions were driven into a far corner of the cage while the parachutist was rescued. No doubt this was the only known case of an airman wishing his "Lions" were missing!

An R.A.F. Grouse

In a letter published this week in our sister journal *The Motor Cycle*, two correspondents bemoan the attitude of insurance companies towards motoring by members of the R.A.F. "Can anyone give us a logical reason why *we* should be considered unsafe?" they ask. "Does it arise from that moth-eaten superstition that because one cruises at 100 m.p.h. in the air one must inevitably endeavour to average 60 m.p.h. on the road in order to avoid 'loitering with intent'?"

THE END OF AN ARCTIC FLIGHT: John H. Grierson greeted on his arrival at Ottawa after his flight in a "Fox Moth" seaplane across the Atlantic via the Arctic Air Route.

Diary of Forthcoming Events

Club Secretaries and others are invited to send particulars of important fixtures for inclusion in this list.

Sept. 22. Norfolk and Norwich Aero Club Garden Party, Norwich.

Sept. 29. Leicestershire Aero Club "At Home."

Oct. 6. London to Cardiff Air Race and Cardiff Ae.C. Garden Party.

Oct. 7 Aviation Golf Meeting, Royal Porthcawl Golf Club Porthcawl.

Oct. 12. Banquet to MacRobertson Race Pilots, Grosvenor House, Park Lane, 8 p.m.

Oct. 18. "The Education of Aeronautical Engineers." R.Ae.S. Lecture by Prof. A. J. S. Pippard.

Oct. 20. England-Australia Race for MacRobertson Prize. Start at Mildenhall.

Oct. 25. "The Compressed Air Tunnel." R. Ae. S. Lecture by Mr. E. F. Relf. R.Ae.S.

Nov. 16-Dec. 2. 14th International Aviation Exhibition, Grand Palais des Champs-Elysees, Paris.

THE INTERNATIONAL TOURING COMPETITION

Won by Bajan on Polish R.W.D.9 Monoplane with Skoda Engine

By A. BUTOSLAWSKI

AT 5 a.m. on September 7th, the first group of five competitors was flagged off for its flight of 9,520 km. (5,915 miles) across twelve countries of Europe and Africa. They were: Karpinski, Kreuger, Francke, Anderle and Ambruz; other batches of five each followed at five-minute intervals. The first landing was at Königsberg. Francke had covered the 281 km. in 1h. 10m. at a speed of 240 km/h (149 m.p.h.), 30 km/h. above the speed of 210 km/h. for which maximum points were given.

The Messerschmitts are the fastest, with their retractable undercarriages, which have also proved to be the least resistant to shock.

Francke was also the first to land in Berlin at 11.40 a.m., his speed between Königsberg and Berlin being 258 km/h. (178 m.p.h.). This gives him only a useful reserve of time in case of a mishap, because speeds above 210 km/h. are not taken into account in the Circuit of Europe.

Karpinski, so far the second man, had a forced landing before reaching Berlin. This caused him to be one day late in Paris, and to get a penalty of sixty points. (At the start of the circuit each competitor was given 160 free points, from which the first arrival *after* the scheduled time at any one of the landings lost sixty, the second 100, and the third entailed complete disqualification.) Later on he was compelled to retire from the competition.

The storm between Paris and Bordeaux considerably delayed the progress of the whole field, but the order remained more or less unaltered. One of the auxiliary Polish aeroplanes, many of which were sent along the course carrying spare parts and Polish engineers, crashed during the storm in the Pyrenees—the pilot was almost unhurt, but the passenger, Mr. Balinski, one of the designers of the PZL, was killed.

Bajan, who was leading at the end of the technical tests with 994 points, was making good progress, although his speed was below the average. He wisely avoided being drawn into a race on the big circuit by one of the foreign challengers, knowing that the engine must be "nursed" for the final speed test, and his reserve of points allows him to avoid too much strain in the reliability trial. In the previous competitions cases were known of pilots sacrificing their own chances of victory in favour of another member of their team in order to wear down the chief rival by an all-out race during the Circuit of Europe.

The four leaders were now: Bajan, Plonczynski, Seidemann, and Hubrich. Plonczynski had a forced landing in Germany, but managed to get things right in time. Florjanowicz, who had 919 points at the beginning of the Circuit, dropped out with the crankshaft of his Walter engine broken. Karpinski also had a Walter on his RWD9.

At Algiers the list of the retired contains the names of: Grzeszczyk (Poland), Bridlinger, Stein, Kreuger, Eberhardt, Morzik (Germany); Vicenzi, de Angeli, Colombo (Italy).

The Czechoslovaks are noticed to be very regular in their flying, and they may secure the team prize, although there are only three of them.

On the stretch from Warsaw to Casablanca (3,716 km.) the average speeds of the leading pilots were as follows: Bajan and Seidemann, 187 km/h. (116 m.p.h.); Hubrich, 166 km/h. (103 m.p.h.); Plonczynski, 224 km/h. (139 m.p.h.); Wlodarkiewicz, 216 km/h. (134 m.p.h.); Pasewald, 208 km/h. (129 m.p.h.); Macpherson, 163 km/h. (101 m.p.h.). Bajan's low average is due to certain failings in the Warsaw-Madrid part of the flight, but as from there his speed was in the neighbourhood of 230 km/h. (143 m.p.h.), if he was able to keep it up his victory was certain.

THE WINNING MACHINE: Bajan's R.W.D.9 (Polish Skoda engine) is fitted with Handley Page leading edge slots and slotted trailing edge flaps. A similar machine secured second place.

At Tunis Bajan had already 1,666 points. He was flying steadily and increased his speed as he was nearing the European part of the Circuit, which he knew well from the many international rallies in which he had taken part. Plonczynski was a close second, with a speed of 218 km/h. (135 m.p.h.). Seidemann, the first of the Germans, had a small misadventure when he forgot his passport in Algiers—his consular authorities had to issue a new one with a speed unknown to ordinary bureaucracy. Capt. Ambruz, the Slovak, was among the first four—he and the two other Czechs were the only team that had no retirements since the beginning.

Between Rome and Zagreb an adverse wind slowed down the pace to less than 200 km/h. (124 m.p.h.). Wlodarkiewicz, on a PZL, was the fastest of all the competitors left in the race. He arrived first in Vienna, to be greeted by the Vice-Chancellor, Prince Starhemberg, and to be offered by the Mayor of Vienna a silver cup as a souvenir. His speed was in the neighbourhood of 238 km/h. (148 m.p.h.). In this connection it is worth noting that the PZL26 he was flying would have been unbeatable if it had had one more passenger seat. Its four seats earned the RWD fifty points more, and probably the victory.

GROOMING THE SKODA : Capt. Bajan watches his mount being overhauled.

Seidemann had a forced landing between Prague and Brno, in Czechoslovakia, but arrived within the allowed time, so as not to incur the sixty points penalty, which would practically mean the loss of any hope of a respectable placing.

The last stages of the circuit led through Katowice, Lwów, Wilno, with a point of control at Lida, the station of the 2nd Regiment of the Polish Air Force, in which Wlodarkiewicz is a lieutenant, and then straight on to Warsaw. The Polish pilots felt at home over a course every mile of which they knew by heart. Enthusiastic crowds waited for them at every landing. The crowds had a right to expect something from them because a part of the considerable funds necessary for the entering of a team of eleven specially built aeroplanes was raised by a national subscription.

The crowds were given all that they could expect for their money; Bajan on a RWD9 with a Polish Skoda engine was first with 1,858 points; Plonczynski, also on a RWD9, Skoda, second with 1,821 points; Siedemann, on a Fieseler, with Argus engine, was third with 1,813 points. The International Touring Competition for the Challenge Cup will therefore be held again in Warsaw in 1936.

THIRD PLACE : Seidemann's Fieseler Fi-97 was fitted with an Argus engine.

AIR STAMPS RE-VALUED

Revised quotations for outstanding rarities in air post stamps are a feature of the new (1935) editions of the standard postage stamp catalogues just published. A comparison of the current valuations placed upon the Newfoundland group by two leading firms of dealers may prove instructive. The "Hawker" Trans-Atlantic air mail stamp figures in Whitfield King's catalogue unused at £500, and used at just half that figure. Robson Lowe's "Regent" Catalogue (2nd ed.), on the other hand, values the same item at only £350 and £140 respectively. The exceedingly rare manuscript "Martinsyde" provisional is listed by the same catalogue at £800.

The "Alcock" stamp in unused condition is priced by Whitfield King at 45s. and by Robson Lowe at 35s. The latter places the very modest valuation of £17 10s. upon a "flown cover" franked with this stamp.

The still rarer "De Pinedo" is priced unused by Whitfield King at £450 and by Robson Lowe at £400, but the "Regent" catalogue values this stamp on cover at 50 per cent. less than the "Standard," this is to say, £30 and £60 respectively.

The "Miss Columbia" flight stamp is listed by Whitfield King at £95, and by Robson Lowe at £65, both unused, but in the case of the "flown cover" the difference is less, being a matter of £60 against £53.

The last Trans-Atlantic air mail stamp issued for Gen. Balbo's formation flight last year is quoted by Whitfield King at 45s. and Robson Lowe at 26s. unused, whilst the latter values a flown cover at 60s. In most cases the actual values of the Newfoundland aero-rarities lie somewhere between the two extremes.

THE ROYAL AIR FORCE

Service Notes and News — *Air Ministry Announcements*

CRANWELL COLLEGE

The Prince of Wales will visit the R.A.F. College, Cranwell, on October 11, inspect the new buildings and formally declare them open.

No. 203 (F.B.) SQUADRON

The three "Rangoons" of No. 203 (F.B.) Squadron from Basra have flown right across the Indian mainland from Karachi to Chittagong. They arrived at Singapore on Monday, September 17.

FLIGHT TO GREENLAND ABANDONED

Two "Perth" flying boats (three "Buzzards") of No. 209 (Flying Boat) Squadron started from Mount Batten on September 12 for Greenland under Wing Commander G. Livock, A.F.C., the C.O. of the squadron. They reached the Faroes on the 14th, but the flight was then abandoned owing to dangerous ice conditions.

No. 205 (F.B.) SQUADRON

No. 205 (Flying Boat) Squadron at Singapore should receive their new equipment of "Singapore III" boats in December. It is reported that the squadron will then undertake a flight from Singapore to Ceylon, *via* the Nicobar Islands, a journey of some 2,000 miles. They may return round the Bay of Bengal *via* Madras, Calcutta, and Rangoon.

AN IRAQI CRASH

A "Dragon" belonging to the Iraqi Army crashed near Hinaidi on September 11, and two officers, a cadet, and two mechanics were killed. Lord Londonderry had a message of condolence sent to the Iraqi Minister of Defence.

EUROPE'S AIR ARMAMENTS

The Armaments Year Book for 1934, drawn up by the League of Nations, has been published by Messrs. Allen & Unwin. It deals with sixty-four countries. The grand total of the machines of the British Royal Air Force, including immediate reserves and training machines, is given as 1,434, with a nominal horse-power of 740,215. The corresponding figures for Italy are 1,507 and 876,847, and for France 2,286 and 1,181,473. These figures do not quite agree with those given in Parliament, but probably there is a difference of opinion in deciding what is an immediate reserve and also what is a training machine. The figures for Russia are only given up to January 1, 1931, when the Red Air Force was stated to have 750 machines, with a total horse-power of 310,400.

NEWTOWNARDS PUBLIC AERODROME FROM WHICH D/F BEARINGS MAY BE OBTAINED

A civil aerodrome open to public use has been established at Newtownards. The use of this aerodrome is restricted to certain types of aircraft. Certain particulars of the aerodrome are given below: further details will be published in the *Air Pilot* in due course.

Controlling Authority: Airwork, Ltd.

Local Position: ½ mile S. of Newtownards, Lat. 54° 35′ N., Long. 5° 41½′ W.

Caution: A group of radio masts, 70 feet in height above ground level constitute an obstruction on the Western boundary of the aerodrome; these masts are not yet illuminated by night.

An aeronautical radio station, brief particulars of which are given below, has been established at Newtownards aerodrome. D/F bearings may be obtained from this station.

Call Sign:—W/T: "G E T".
R/T: "Newtownards".

Frequency (Wave length):—348 kc/s (862 metres).

Hours of Watch:—From 0800 to 1930 hours (Sundays included) and later if especially required.

R.A.F. STAFF COLLEGE

The following officers have been nominated by their respective Dominion Air Boards to attend the R.A.F. Staff Course, 1935:—

Royal Australian Air Force

Flt. Lt. U. E. Ewart, Flt. Lt. F. R. W. Scherger.

Royal Canadian Air Force

Flt. Lt. F. G. Wait, Flt. Lt. A. P. Campbell.

Royal New Zealand Air Force

Flt. Lt. A. de T. Nevill.

ADVANCEMENT FROM WARRANT TO COMMISSIONED RANK

Lists of recommendations for permanent commissions in the stores branch or as commissioned engineer, signals or armament officers are in future to include only warrant officers who are under 40 years of age (reckoned from the age declared on attestation) on the date on which the recommendations are due at the Air Ministry. The special provision under which candidates between the ages of 40 and 42 could be recommended for permanent commissions in the stores branch if of outstanding merit, is withdrawn.

VOLUNTARY AID DETACHMENT

Arrangements have been made for a short course of training in air force hospitals for a certain number of V.A.D. members of the following categories:—Nursing members (women), and nursing members (men). The course is limited to eight days.

ROYAL AIR FORCE GAZETTE

London Gazette, September 11, 1934

General Duties Branch

F/O. (Hon. Flt. Lt.) A. P. C. Hannay, M.C. (Captain, Cameron Highlanders), is promoted to the rank of Flight Lieutenant (July 15).

The undermentioned Flying Officers are promoted to the rank of Flight Lieutenant (Aug. 1):—D. B. McGill, N. A. Tait, R. L. Mills, W. H. Jones, A. M. Watts-Read, N. W. A. Cullum, R. J. Clare Hunt, J. Coverdale, W. R. Worstall, E. M. F. Grundy, R. J. Cooper, G. N. E. Tindal-Carill-Worsley, C. Ryley, E. J. Lainé, J. J. Owen, R. A. Sprague, A. L. Franks, G. R. Montgomery, E. B. Grace, J. Constable-Roberts, H. P. Fraser, G. J. C. Paul, R. Harston, F. J. St. George Braithwaite, G. D. Emms, C. M. Champion de Crespigny, A. E. Louks, H. B. Collins, J. Cherrill, E. G. Granville, H. L. McCulloch, J. A. Easton, B. T. Shelley, J. D. Rutherford, E. R. M. Walker, K. R. Coates, J. R. Scarlett, G. P. Charles, J. G. W. Weston, F. L. P. Henzell, D. J. Eayrs, R. C. Jonas, W. R. Beaman, H. G. Richards, D. P. Lascelles, G. Silyn-Roberts.

Flt. Lt. H. H. Martin is restored to full pay from half-pay (Aug. 30).

F/O. G. C. O'Donnell, D.F.C., is placed on the retired list (Sept. 7).

Stores Branch

The undermentioned Flying Officers are promoted to the rank of Flight Lieutenant (Aug. 1):—P. J. Mote, A. E. Evans, D.F.C., G. J. Gaynor, A. A. Quayle, R. B. Horstmann, P. H. Wilcox, W. A. Stagg, C. J. Nobbs, H. D. Jackman, E. H. Walker, C. L. Gilbert, E. G. Northway, M.B.E., W. G. S. Wood, J. W. Stokes, R. N. Hesketh, B. G. Pool.

Accountant Branch

The undermentioned Flying Officers are promoted to the rank of Flight Lieutenant (Aug. 1):—F. Rigby, T. P. E. Campbell, R. J. Wishlade, D. C. Stone, C. L. Dook, H. R. Withers, A. E. Fairs, M.C., J. P. Cave, D. Sender, J. A. Stephenson, A. L. Derry, K. A. Jackman, W. F. Quillam, J. Lambie, H. Crowther, R. Cassels, A. W. Younghusband, R. A. J. Mullarkey, W. S. Calder, R. S. Sweet, H. D. Connor, J. E. Gregson, B. Chadwell, D. A. K. Yiend, J. H. Glenn.

Medical Branch

F/O. (Quartermaster) Daniel Breen is promoted to the rank of Flight Lieutenant (Sept. 1).

Sqd. Ldr. (Honorary Wing Com.) Edgar Huntley, O.B.E., M.B.,

B.S., M.R.C.S., L.R.C.P., relinquishes his temporary commission on completion of service and is permitted to retain the honorary rank of Wing Commander (Aug 22).

Flt. Lt. (Honorary Sqd. Ldr.) Ernest Emrys Isaac, M.C., M.R.C.S., L.R.C.P., relinquishes his temporary commission on completion of service and is permitted to retain the honorary rank of Squadron Leader (April 4). (Substituted for the notification in the *Gazette* of April 24.)

ROYAL AIR FORCE RESERVE

Reserve of Air Force Officers

General Duties Branch

Frank Dawson Paul is granted a commission as Pilot Officer on probation in Class AA (i) (Aug. 25).

Pilot Officer on probation Kendrick Herbert Salusbury-Hughes is confirmed in rank (Aug. 13).

F/O. Alfred John Clifford Overal is transferred from class A to class C (Aug. 19).

The undermentioned Flying Officers reliquish their commissions on completion of service:—J. P. Dewsbery (July 15), J. Leigh (July 17).

F/O. H. C. Cooke relinquishes his commission on completion of service and is granted the rank of Flight Lieutenant (Aug. 21).

F/O. H. E. Reekie resigns his commission (July 25).

AUXILIARY AIR FORCE

General Duties Branch

No. 600 (CITY OF LONDON) (FIGHTER) SQUADRON

A. A. Vickers is granted a commission as Pilot Officer (Aug. 5).

No. 601 (COUNTY OF LONDON) (FIGHTER) SQUADRON

P. B. Robinson is granted a commission as Pilot Officer (Aug. 5).

Accountant Branch

No. 605 (COUNTY OF WARWICK) (BOMBER) SQUADRON

E. A. Titley is granted a commission as Pilot Officer (Aug. 5).

NAVAL APPOINTMENTS

The following appointments were made by the Admiralty:—

LT. (FLT. LT., R.A.F.).—R. A. KILROY, to *Victory*, for R.A.F. Base, Lee-on-Solent, for 444 F.S.R. Flight (Sept. 3).

LT.-COM. (FLT. LT., R.A.F.).—L. G. RICHARDSON, to *Victory*, for R.A.F. Base, Gosport, for course (Sept. 3), and to *Courageous* for 821 Squadron (on completion of course).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air force are notified:—

General Duties Branch

Air Commodore.—E. L. Gossage, D.S.O., M.C., to Headquarters, R.A.F. Iraq, Hinaidi, 1.9.34. For duty as Senior Air Staff Officer, Vice Air Com. A. D. Cunningham, C.B.E.

Wing Commander.—C. B. Dalison, A.F.C., to R.A.F. Depot, Middle East, Cairo, 1.9.34. For Engineer duties.

Flight Lieutenants.—P. F. G. Bradley, to No. 142 (B) Squadron, Netheravon, 5.9.34. W. G. Campbell, to No. 22 (B) Squadron, Donibristle, 5.9.34.

Flying Officers.—J. Y. Humphreys, to No. 60 (B) Squadron, Kohat, India, 4.8.34. J. G. G. Moore, to R.A.F. Base, Calshot, 5.9.34. A. C. Watson, to No. 2 (A.C.) Squadron, Manston, 3.9.34.

Pilot Officers.—The following Pilot Officers and Acting Pilot Officers are Posted to their respective Units on 2.9.34, on completion of flying training:—A. P. Chamberlain, to No. 99 (B) Squadron, Upper Heyford. J. G. Davis, to No. 142 (B) Squadron, Netheravon. G. L. S. Griffith-Jones, to No. 4 (Army Co-operation) Squadron, South Farnborough. E. Shipley, to R.A.F. Base, Calshot. R. E. G. Brittain, to No. 26 (Army Co-operation) Squadron, Catterick. F. A. Paynter, to No. 2 (Army Co-operation) Squadron, Manston. J. A. Robinson, to No. 26 (Army Co-operation) Squadron, Catterick. P. B. Wood, to No. 16 (Army Co-operation) Squadron, Old Sarum.

Acting Pilot Officers.—J. L. Barker, to No. 2 (Army Co-operation) Squadron, Manston. A. M. A. Birch, to No. 26 (Army Co-operation) Squadron, Catterick. T. I. Davies, to R.A.F. Base, Calshot. A. A. de Gruyther, to R.A.F. Base, Calshot. J. E. G. G. F. Gyll-Murray, to No. 7 (B) Squadron, Worthy Down. W. A. K. Igoe, to R.A.F. Base, Calshot. D. F. Macdonald, to No. 9 (B) Squadron, Boscombe Down. R. B. Middleton, to No. 22 (B) Squadron, Donibristle. D. M. Newman, to No. 13 (Army Co-operation) Squadron, Netheravon. R. V. L. Pattison, to No. 2 (Army Co-operation) Squadron, Manston. B. Robinson, to No. 16 (Army Co-operation) Squadron, Old Sarum. C. F. Sarsby, to No. 2 (Army Co-operation) Squadron, Manston. J. Shepherd-Smith, to No. 17 (F) Squadron, Kenley. D. G. H. Spencer, to No. 16 (Army Co-operation) Squadron, Old Sarum. J. A. Sutherland, to No. 22 (B) Squadron, Donibristle. J. C. Taylor, to No. 142 (B) Squadron, Netheravon. R. L. Vivian, to No. 26 (Army Co-operation) Squadron, Catterick. H. de C. A. Woodhouse, to No. 58 (B) Squadron, Worthy Down. H. V. Alloway, to No. 2 (Army Co-operation) Squadron, Manston. S. S. Bertram, to No. 99 (B) Squadron, Upper Heyford. A. P. W. Cane, to No. 26 (Army Co-operation) Squadron, Catterick. K. Capel-Cure, to No. 2 (Army Co-operation) Squadron, Manston. E. L. Colbeck-Welch, to No. 22 (B) Squadron, Donibristle. C. A. H. Evans, to No. 4 (Army Co-operation) Squadron, South Farnborough. L. P. Gibson, to No. 22 (B) Squadron, Donibristle. G. E. Jackson, to No. 16 (Army Co-operation) Squadron, Old Sarum. V. H. A. McBratney, to R.A.F. Base, Calshot. A. M. Mulliken, to No. 13 (Army Co-operation) Squadron, Netheravon. C. R. Paylor, to No. 16 (Army Co-operation) Squadron, Old Sarum. B. V. Robinson, to No. 40 (B) Squadron, Abingdon. P. H. R. Saunders, to No. 16 (Army Co-operation) Squadron, Old Sarum. E. U. G. Solbe, to No. 12 (B) Squadron, Andover. G. J. D. Thomson, to No. 22 (B) Squadron, Donibristle. R. H. Waterhouse, to No. 22 (B) Squadron, Donibristle.

Stores Branch

Flying Officers.—W. G. S. Wood, to School of Store Accounting and Storekeeping, Cranwell, 3.9.34. R. C. V. Ash, to Aircraft Depot, Iraq, Hinaidi, 1.9.34.

Pilot Officer.—W. MacI. King, to Administrative Wing, Cranwell, 3.9.34.

Medical Branch

Flying Officer.—J. A. Crockett, to No. 3 Armament Training Camp, Sutton Bridge, 3.9.34.

Chaplains Branch

Rev. H. Thomas, to Headquarters, R.A.F., Cranwell, 4.9.34. For duty as Chaplain (C. of E.).

10760s

GLOSTER P.V. F.7/30 FIGHTER (BRISTOL "MERCURY"): A formidable fighter armed with four machine guns, one on each side of the fuselage and one below each wing. The Dowty sprung wheels of the under-carriage are fitted each on a single cantilever strut. (*Flight* Photo.)

FRANCE AND THE MACROBERTSON RACE

Seven Entries : Two Probable Starters

THE hitherto obscure situation regarding France's entries is defined by the report of *Flight's* "MacRobertson" correspondent, who (by courtesy of Imperial Airways) flew last week to Paris to interview the competitors and the makers of aircraft entered in their names.

At the close of enquiries occupying five days, he reports that, of seven teams entered for the race, only two are likely to compete. In both cases the prototypes are still undergoing makers' tests, but are expected to be ready for delivery by the end of September.

The probable starters are: No. 13—Capts. Edouard Corniglion-Molinier and Léon Challe in the Wibault-Penhoët 366, and No. 54—Charles Quatremarre and Louis Massotte in the Blériot III.

The *secrétaire sportif* of the Aéro Club de France informed our correspondent that, while unofficially cognisant of competitors' intentions, he cannot advise the Royal Aero Club of forfeited entries until notified by the competitors.

No. 17, André Guéit (Caudron monoplane), has already officially withdrawn.

No. 10, Michel Detroyat, has expressed himself not wholly content with the performance of the Hispano-Suiza installed in the Lockheed Orion purchased during his recent honeymoon in America. Michel is spending a few weeks at Cannes; Madame is on a visit to Tiflis (Tunis), and the aircraft is for sale.

No. 12, Vicomte Jacques de Sibour, who had entered an unspecified type of Couzinet, is also absent from Paris. As representative of the Standard Franco-Américaine de Raffinage he has gone to Warsaw for the Polish Aero Club's International Touring Contest. An official of the Standard Oil Company states that the Viscount will definitely not compete in the race to Australia. The secretary of Avions René Couzinet reports: "No Couzinet machine will contest the MacRobertson Trophy; the entry was premature."

No. 18, Marcel Fréton and d'Estailleur Chanteraine have failed to secure a variable-pitch propeller for the Potez 39 (Lorraine Pétrel) entered in their names, and will not acquire the machine.

No. 39, André de Roussy de Sales and Jean Lacombe, have failed to obtain the loan of the Bernard 84 monoplane or the Mistral Major engine entered in their names.

WHO'S WHO IN THE MACROBERTSON RACE

Introducing Some of the Competitors

(*Continued from page 947*)

Racing No. 13.—Capt. E. Corniglion-Molinier and Capt. L. Challe (France)

IN this adventurous pair the spirit of Beau Geste transcends every other emotion. Your true sportsman employs no publicity agent to blazon his past achievements. Nor will he talk of them himself. One recently had two interviews in Paris with Molinier. The first was in his own office, and yielded very little concerning himself yet a great deal in praise of his flying partner Léon Challe. The second was in Challe's office, where one heard from the latter a great deal of the war record of Molinier, but next to nothing of Challe.

When not directing the affairs of the Cie. Continentale Cinématographique from an office overlooking the Champs Elysées, Capt. Edouard Corniglion-Molinier commands the Third Régiment de l'Aviation de Chasse. In leisure moments he adopts the rôle of Christopher Columbus. But instead of discovering new worlds he rediscovers old ones. Last year he visited Central Arabia. He had long been intrigued by the official map of that mystic country, on which the central portion—a tract three times the size of France—is still labelled "unsurveyed desert." So he borrowed the private aeroplane of a former war comrade who controls the Gnome and le Rhone enterprise, modified it according to the requirements of a tropical expedition, and flew it from Paris to Djibouti. From there he made his aeriel survey. To the delight of the world's most eminent geologists, and to the chagrin of the authorities at Aden, Molinier discovered and photographed what experts now agree to have been the ancient kingdom, or queendom, of Sheba. Close examination of the photographs suggests that in its heyday (2000-1500 B.C.) this Biblical city was as important as Paris is to-day; it is certainly no smaller than the French capital, and of an architectural grandeur of the most impressive. "And your reward," one asked, "for this remarkable contribution to Biblical history?" The explorer laughed heartily. "I had dared to hope for promotion to rank of major. On my return to Paris I was told to consider myself fortunate if I avoided fifteen days' arrest for breach of international etiquette. One should have applied to the Yemen authorities for permission to fly over their unsurveyed desert." He laughed again when asked had he any superstitious sentiment regarding the number "13," which he has drawn for the race to Australia.

No number could have given Molinier greater joy. He was born on the thirteenth—of January, 1898—at Nice. He learned to fly in one of the earliest Blériots (Channel type), and was licensed in 1915. In the same year he served with No. 103 V.B. (Voisin Bombardement) Squadron, and flew the first Caproni in France. In 1916 he piloted hydroplanes until wounded. After a brief sojourn in hospital he was transferred to the Italian Front with an Escadrille de Chasse (Nieuports). In 1917-1918 he was commandant of 120 Squadron (Spad) on the French Front,

Capt. Edouard Corniglion-Molinier.

Capt. Léon Challe.

and, later, joint Directeur des Services Techniques with Col. Brocard.

Molinier's connection with the regular Air Force has remained unbroken. He is at present *en congé* for five years. His twenty-three war decorations—French, Italian, and Belgian—include the Legion d'Honneur, Medaille Militaire, and Croix de Guerre. He shot down nine enemy aircraft—German, Austrian, and Hungarian. For one of his victims, Capt. Esway, a Hungarian pilot, Molinier has found employment as London representative of his cinematograph company. One was shown a letter from Esway to the pilot who shot him down. It begins: "My dear friend and beloved enemy."

Molinier has flown more than 400,000 miles.

Capt. Léon Challe is also an officer of the regular Air Force *en congé* for five years. Like the Vicomte de Sibour (who had entered for the MacRobertson Race, and has since withdrawn), he is a member of the Paris branch of the Standard Oil Co. Born at Rennes on July 20, 1898, he served throughout the war in the Chasseurs Alpins, and joined the Air Force in 1921. Among his twelve decorations are Legion d'Honneur, Croix de Guerre, and the coveted Italian Order of St. Michael and St. Lazare.

In 1926 he won the International Michelin Cup (Blériot Spad, 480 h.p. "Lorraine"), and set up a world-distance record (with Capt. Weiser) with a 3,235-mile flight from Paris to Bandar Abbas. In 1927 (with mechanic Rapin) he flew from Paris to Saigon and back (about 15,000 miles). In 1930 (with Uruguayan pilot Larra Borjas) he made a non-stop flight from Seville, across the South Atlantic, to Natal (Brazil), 5,000 miles. He has several South American long-distance flights to his credit, and secured second prize in the recent Oases Meeting in Egypt.

Racing No. 1.—W. Hirth, H. Illg and (probably) O. Weller (Germany)

The race will be "on" at the moment Germany's entry for the Handicap event is flagged off the starting line at Mildenhall aerodrome. But details of "No. 1" are still secret. In a letter dated August 29 its entrant states that "the new Messerschmitt aeroplane is an experimental design, and descriptions and photographs may only be published with the permission of the German Air Ministry; I shall be glad to send you every information as soon as I get the necessary permission. The first test flights," he adds, "were quite successful, and it may be that this aeroplane has a good chance for the race. But one never knows . . . and we know practically nothing about our competitors."

Wolf Hirth, pilot of No. 1, is the world's acknowledged leader of soaring flight. Born in 1900, his first tentative excursion into the air was made during the 1922 gliding and soaring contest at Rhoen, with, he tells us, "a very crude glider of my own design." Since then he has missed only two of the annual contests. His 1923 entry cost him three months in hospital. He was again in hospital when the 1925 contest took place, this time from injuries sustained during a motor cycle race. In 1930 he was abroad.

Hirth obtained his "A" licence in 1926. Two years later he competed, without success, in the first International Touring Contest. In 1929 he won the Hindenburg Cup for best performance of the year with a series of long-distance flights in a 40 h.p. Klemm. In 1930, in the same machine, he paid a series of visits to England and the Isle of Man, and from the Orkneys to Iceland. In America he won the Elmira contest and made the first distance-flight by thermal currents only. A lecture tour of the U.S.A. kept him out of the 1930 Rhoen contest. In 1931 he made the first soaring flight over New York and soaring flights in England, won the Rhoen contest, and was awarded the Hindenburg Cup for best performance and for research work toward progress of soaring flight. That year he also competed in the *Deutschlandflug* race, finishing second. In 1932 a forced landing within 300 yards of the finishing line robbed him of almost certain victory in the third International Touring Contest. In 1933 he was transferred from technical control of the Gronau school of soaring flight to a similar appointment (still retained) with the Hornberg school, Württemberg. In addition, he was appointed *Privatdozent* to the Stuttgart University of Technical Science. In the same year he took his "B" licence and completed a course of night and blind flying. During 1934 he has again won the annual contest at Rhoen, set up a world record

Herr. Wolf Hirth being snapped by "Papa" Ursinus.

(since broken) by gliding 233 miles from the Wasserkuppe to Goerlitz at 40 m.p.h., and conducted experimental and research work in South America with Professor Georgii, Hanna Reitsch, and Heine Dittmar. At the time of writing he is touring Europe in the eighth International Contest, which ends on September 16.

Herman Illg, who will accompany Hirth in the race to Australia, and is with him in the present contest, is a pilot of considerable ability and an associate of Wolf Hirth's brother, Helmuth Hirth, the well-known aero engine designer. A soaring pilot of some distinction, Illg is also a ground engineer.

Oskar Weller, who may be the third man of the party to Australia, is modest. "I am," he says, "neither pilot nor engineer; just a plain journalist who accompanied Herr Hirth on his adventurous flight to Iceland." Despite the Dickensian surname, Weller is a perfectly good Teuton and lives in Berlin.

Latest Race News

Mr. and Mrs. Mollison, who are flying in one of the three D.H. "Comets," are among those far-sighted people who have made arrangements for the supply of fuel at each of the five compulsory stopping points. During the race Mrs. Mollinson will act as the "navigation expert," and she hopes to "check up" at night by the use of a bubble sextant and some special tables, similar to those being used for the navigation of Miss Jacqueline Cochran's Northrop, as mentioned last week. The Mollisons will fly on a course of approximately constant bearing, Mr. Mollison having had considerable experience with this type of flying during his last transatlantic flight. Much of the work in connection with this scheme has been done by the Aviation Department of the Automobile Association.

The Mollisons' "Comet" will carry a Sperry "Artificial Horizon," a directional gyro, and a full set of navigation instruments in both cockpits. Mr. Mollison expects to fly at between 10,000 and 13,000 ft. and to keep the throttle wide open all the way to Australia. The whole flight and climbs to the operating altitude will be made according to a predetermined number of r.p.m.

Of the speed of the "Comet" Mr. Mollison can say nothing at present, for the very good reason that he has not been told. However, he quotes the words of Capt. Hubert Broad, spoken after the first test flight of the "Comet." Capt. Broad said that he was "tickled to death."

Other MacRobertson Items

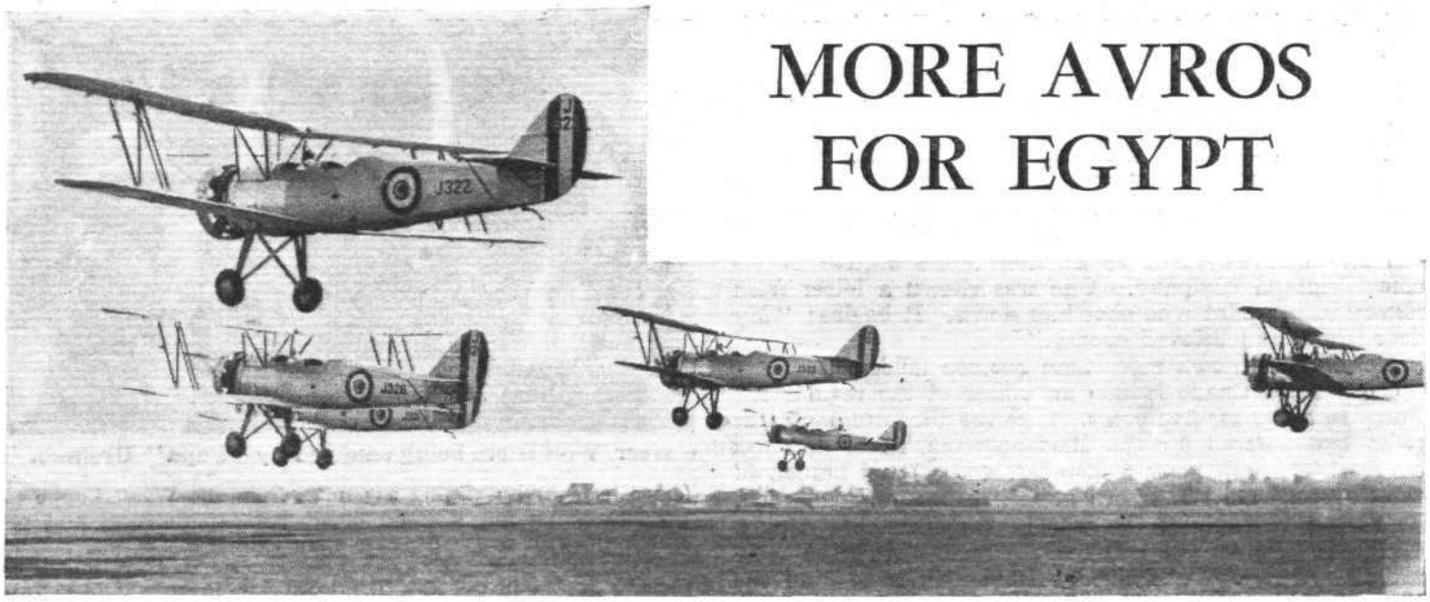
Capt. J. J. Jeffs, an officer in the control tower at Croydon Aerodrome, has been appointed by the Royal Aero Club to be controlling officer at Mildenhall. For eight days before the race Capt. Jeffs will officiate at the acceptance trials of the competitors.

An unconfirmed report states that Wiley Post has been forced to abandon his idea of taking part in the race, owing to damage to his Lockeed "Vega," the *Winnie Mae*.

Mr. Melrose, who is flying a Gipsy Moth in the race, and who recently made a record-breaking flight round Australia, left for England on Sept. 16.

Contrary to our report last week, in which we stated that the K.L.M. "Douglas" might not take part, we now understand that it is almost certain that the machine will be in the race. It will be flown by Parmentier and Moll, both K.L.M. pilots. Mail for the Dutch East Indies and three passengers for Australia will be carried in the machine.

Col. Fitzmaurice's Bellanca *Irish Swoop* was supposed to have made its first flight on Sept. 12.



MORE AVROS FOR EGYPT

Ten 626s to supplement those already in service with the Egyptian Army Air Force

IN November last year a batch of ten Avro 626 biplanes with 277 h.p. Siddeley "Cheetah" V engines was flown to Egypt, where the machines have since been used for co-operation with infantry battalions at Assuit, Assuan, Mex, Soluum, and El Arish, and for patrol work in connection with the prevention of drug smuggling in the Sinai desert. They have also been employed for normal flying training and in the making of a British film called "The Camels Are Coming," which is soon due for release in this country.

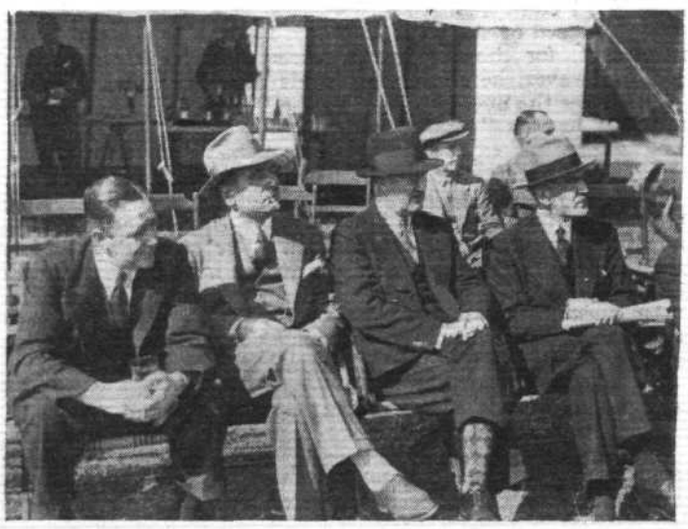
Last Friday ten more identical machines were inspected at Lympne by the Egyptian Chargé d'Affaires in London, H. E. Hakki Bey. They started on their journey to Egypt on Monday, September 17, and are flying to Cairo by way of Paris, Marseilles, Naples, Catania (Sicily), Tunis, Tripoli, Benghazi, and Mersa Matruh. Their duties in Egypt will include co-operation in anti-contraband measures, aerial survey of the south-western desert regions, and the establishment there of a network of landing grounds.

The machines put up quite an impressive display of formation flying at Lympne. A flight of five of them performed a kind of "Prince of Wales's feathers" wherein the rearmost two machines of the "V" simultaneously zoomed upwards and outwards from the diving formation, followed two or three seconds later by the next two men, while the leader continued his dive to within about 200ft. of the ground and pulled his 626 up into a steep zoom. H. E. Hakki Bey seemed pleased.

One was told that the Avros have stood up to the hard work in Egypt remarkably well. Maintenance troubles have been practically nil. No one seemed to know why 626s were chosen for the work when Avros produce the 637, which was built specially as a light military general purpose machine. Perhaps it is because the armament of the machines is but rarely used and a normal cockpit is more comfortable on long desert patrols than one carrying a gun ring. In the 626, of course, an Avro gun mounting may be installed over a third and specially designed cockpit behind the second seat.

The following are the names of the officers and men who will man the machines on their flight to Egypt:—

Kaimakam (Colonel) V. H. Tait Bey, Bimbashi (Major) S. N. Webster, A.F.C., Mulazim Awal (Lieutenant) Abdel Halim Mohammed Deghedi, Mulazim Awal (Lieutenant) Abdel Monim el Midati, Mulazim Awal (Lieutenant) Mohammed Abdel Monim Ahmed, Mulazim Tami (2nd Lieutenant) Mohammed Abdel Halim Khalifa, Mulazim Tami (2nd Lieutenant) Ismail Hakki Haroun, Mulazim Tami (2nd Lieutenant) Hassan Akif, Mulazim Tami (2nd Lieutenant) Saleh Mohammed Saleh, Mulazim Tami (2nd Lieutenant) Noman Abdel Raouf Nada, Mulazim Tami (2nd Lieutenant) Hassan Mahmoud, Warrant Officer H. Dingwall, Warrant Officer A. T. Martin, Warrant Officer H. L. Whitlock, Warrant Officer H. R. Walker, Shawish (Sergeant) Ali Shihata Adan, Onbashi (Corporal) Sayed Sharawi, Nafar (Private) Ahmed Abdel Razek Salim, Nafar (Private) Ahmed Ibrahim Mustafa, Nafar (Private) Mohammed Mahmoud el Kasabg.



THE CRITICS: Mr. Dobson, Husein Bey (an Egyptian Member of Parliament), Sir John Higgins, and H. E. Hakki Bey watch the evolutions of the Egyptian Avros. Right, the Egyptian party, with Kaimakam Tait Bey and Bimbashi Webster, inspects the personnel. (*Flight* Photos.)

COMMERCIAL AVIATION

— AIRLINES — AIRPORTS —

AIR LINE DEVELOPMENTS IN INDIA

Proposals for Increased Finance. Civil Aviation Report

THE announcement made recently in the Legislative Assembly at Simla by Sir Frank Noyce, Member for Commerce, that he hopes shortly to place before the Standing Finance Committee proposals for extensive capital expenditure on civil aviation is an evidence that the Government of India are prepared to back their faith in the possibilities of air services in the country. Financial stringency has, during the past few years, acted as a brake on the forward policy.

Details of the Government's proposals are not yet available, but the broad lines were indicated by Sir Frank Noyce, when he stated that attention should be given in the first instance to the trans-India, the Karachi-Bombay and the Madras-Colombo routes.

On these routes the programme will be to provide permanent runways at all important aerodromes, to enlarge and improve these, and to provide adequate hangars, to lay out additional emergency landing grounds, and to floodlight the Karachi-Calcutta section. It is hoped, also, to provide observatory buildings and quarters for meteorological staff, a most important move in view of the future development of regular mail services across India to Australia and the Far East.

With the meagre funds hitherto available for the purpose, it has not been possible to do more than the bare minimum in rendering the main aerodromes fit for heavy machines in all weathers, and still further sums will have to be spent before even this ideal is attained. The airport in Jodhpur State compares favourably with the best that are to be found anywhere in the world, and it may serve as a model for other aerodromes in India.

On the subject of training Indians to take their place in the coming development of aviation in the country, Sir Frank Noyce was able to give an assurance in the Assembly that Government would do all they could to give such training in every possible way. Already a number of Indians occupy responsible posts at aerodromes, and others are under training. In the air transport companies themselves, moreover, endeavour is being made to provide openings for young Indians, and only recently applications were called for from candidates for the posts of assistant pilots and ground engineers in the leading company operating in India.

Report on Civil Aviation

The annual report on the progress of civil aviation in India has just been published by the Government of India. The report states that during the year 1933 the quantities of mail carried to and from India increased by 27 and 29 per cent. respectively. Outward mails were approximately equal to the inward, in spite of the fact that higher postal fees are charged in India. The amount of freight carried showed remarkable development, the value of imports by air rose from Rs.8,28,786 to more than Rs.50,60,000, while exports rose from Rs.15,353 to Rs.44,206. More than half of the imports were diamonds.

Referring to the internal air lines, the report states that the Karachi-Madras route, which is operated by Tata's with only three machines and without wireless facilities, achieved "a regularity of 100 per cent. and a punctuality almost equally good." On no occasion did it fail to make a connection at Karachi with the westbound Imperial Airways service. Mails carried on this route increased by 127 per cent. in nine months.

The report mentions the provision in the near future for night flying over the whole distance from Karachi to Calcutta, beacons being provided at intervals of 100 miles. These beacons will be of the automatic, or "Sun Valve" type. The main aerodromes of Karachi, Delhi, Cawnpore, Alahabad, Calcutta, Akyab, and Rangoon will be fully equipped with floodlights, etc.

Discussions, says the report, are still in progress regarding the extension of the Karachi-Madras route to Colombo, and three other services are projected to link Bombay with Calcutta, Calcutta with Madras, and Karachi with Lahore.

The number of flying clubs grows slowly but surely, there being seven subsidised clubs and one unsubsidised club in British India, but there are only 29 aircraft available for these clubs—for an aggregate membership of 1,750.

10800s Missing - only other 10799s

SMART AND SPEEDY: A new D.H.89 just delivered to Hillman's Airways, Ltd. (*Flight* Photo.)

Commercial Aviation

CROYDON

Extremes Fly : A Picturesque Air Route : Aerodrome Mushrooms

MARY CLAISEN, aged 3¾ months, travelled by "Heracles" with her parents to Croydon from Salisbury, South Rhodesia, last week. During the air journey she slept a great deal and did not cry at all, but in the Customs at Croydon she wept bitterly. It may be that a contraband safety pin pricked her conscience. In three months time she will return by Imperial African Service. At the other end of the scale was Mrs. Goodall, a passenger of Surrey Flying Service, Ltd., who will be 90 this month; she flew over her house at Tatsfield with her grandson, aged 13, and described the flight as the most interesting experience of a long and active life; and yet we fairly frequently hear of great bull-necked business men of 40 too timorous to step aboard an aeroplane!

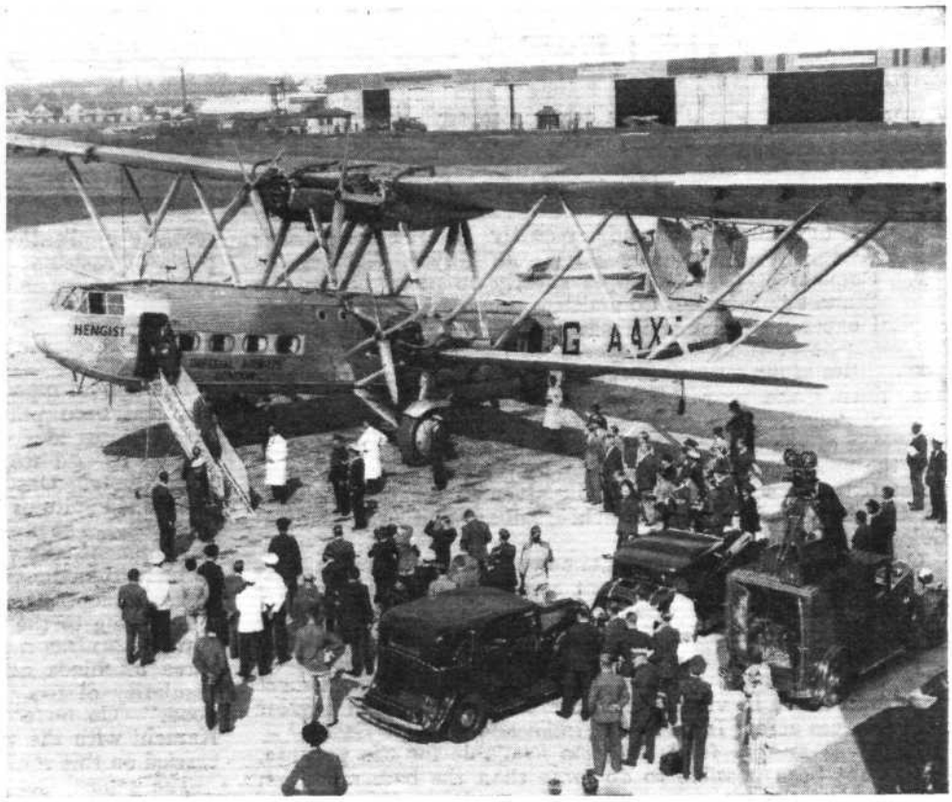
Having just flown from Plymouth to London by Provincial Airways, Ltd., I am more than ever convinced that theirs is one of the most beautiful—as well as one of the best organised routes in England. There is typical English agricultural country, forest, glimpses of sea coast, wild Dartmoor, the red cliffs of Devon: it is a route foreigners "in search of England," should try.

At Plymouth to-day you meet with extreme civility and a warm reception, and the pilots are the acme of politeness and consideration.

The wireless mast at Ruysselede, Belgium, has been fitted as a radio beacon for morse and is said to be of use on 900 metres wavelength through ordinary pilots earphones. It seems that all experiments were made on the ground and pilots report that little or nothing can be heard when in the air. It has an alleged range of 10 miles, but rumour credits a pilot with having flown right over it, listening intently, without hearing much.

"Sabena" announces amazingly good value in winter air travel. Passengers, after September 14, paying normal return fare may spend a week-end in Ostend where the Grand Hotel du Palace des Thermes (where therms go in winter time perhaps) offers free meals and accommodation, from dinner on arrival to breakfast before departure, from Friday to Monday. Accommodation is regal; it includes room with private bath with hot, cold, salt and fresh water, and moreover the first nine passengers by air any day obtain a free ticket for the Casino. All this costs a mere £5 4s.—an attractive offer!

Mr. E. E. Maclennan, the photographer, has returned to Croydon where he has set up permanently as an air and press photographer. Mr. Maclennan will be remembered for his "Times" photographs of the India route and other "infra red" work over London and the England countryside. Capt. G. P. Olley made a fast non-stop flight in a "Dragon" from Lausanne to Croydon recently in 4 hr. 10 min. It was a business charter in which time meant money to the hirer.



A ROYAL PASSENGER: Prince George leaving *Hengist* at Croydon after his flight from Paris last week.

Several changes in programme announce the coming of winter. Imperial Airways, Ltd., have discontinued the 18.30 departure from Paris, though the 18.30 out from this end still runs. The French and Belgium lines, K.L.M. and Provincial Airways, all announce some time-table changes, but the K.L.M. 19.00 departure and the two late arrivals at 20.00 and 20.50 are still in operation.

The mushroom season is in full swing here and 40lb. are said to have been gathered in one day. Pickets have to be thrown out at dusk to prevent enterprising strangers scaling our fences and gathering mushrooms to the danger of night landing aircraft. What with hares, partridges, and mushrooms, the aerodrome, if properly organised by whatever Air Ministry Department deals with cookery, might provide a pie to rival that of the Cheshire Cheese; which could be eaten at the Airport Hotel.

"A. VIATOR."

AIR SURVEY IN MINERAL PROSPECTING

H. HEMMING AND PARTNERS, LTD., announce that they have completed negotiations with Mr. Karl Sundberg, the distinguished Swedish Geophysicist, through his companies, the Swedish Prospecting Company and the Swedish Diamond Drilling Company, whereby they will jointly undertake all the initial field work associated with mineral prospecting from the preliminary air survey and geo-electrical investigation to the final diamond drilling.

Mr. Sundberg's methods of geophysical investigation are well known in mining circles. The Boliden ore field in Sweden was discovered by geophysical methods. An affiliated company in the United States located zinc, and later large lead zinc deposits at Buchan River in Newfoundland were also found. Successful surveys for oil were also made in Texas. Expeditions have worked in the Dutch East Indies, Japan, Morocco and Tunis. The Swedish Company is also at present operating in East Africa and Western Australia for British interests.

Geo-electrical investigation to be successful requires the assistance of good geological maps. Having carried out a great deal of work of recognised value, Mr. Sundberg realised that to achieve the maximum success for his methods a co-ordinated plan to include each stage in mineral prospecting was necessary, and as the first and most important step was to learn something of the general geology and topography of the country, it became essential for him to ally himself with an air survey organisation.

H. Hemming and Partners will be responsible for the air survey and the geological interpretation of the air photographs from which they will make geological reconnaissance maps and mosaics as required. The information gained from the survey will enable the most promising areas to be selected for detailed geophysical investigation by the Swedish Prospecting Company, and those areas which justify diamond drilling operations will be dealt with by the Swedish Diamond Drilling Company.

HESTON

Some Statistics : Increasing Figures for Airwork School and Customs Clearances

THE Publicity Department of Airwork has been indulging in an orgy of statistics. At intervals an insatiable thirst sends it out in quest of numbers and figures. When these "mystical mathematicks" have been collected pages of them are set out in various delightful ways and forms, and some of these are therefore given below.

In the months May to August inclusive the Heston School of Flying has had 96 days on which it has been fine enough for instruction work, and its total of hours flown is 1,766. This gives at first sight the pleasing if fallacious average of 18 hours per day, which when compared with the average of 9 hours a day shown by a previous four months' records demonstrates that the School is progressing (if the rate of increase continues) to a 27-hour day; although this is divided among several instructors, they will obviously in the future have to wrestle with the space-time question.

The number of persons clearing Customs over the last four years during the same period, May to August, are given below.

These figures show a steady increase in continental traffic up to 1933, with a rather striking rise to a 500 per cent. increase this summer on the figures for last year.

	1931	1932	1933	1934
Persons in	396	581	743	3,617
Persons out	426	655	814	4,009
Total	822	1,236	1,557	7,626

During August alone the total landings and take-offs at Heston were 3,284, of which two thousand were those of private aircraft, and 331, 294 and 331 those of the regular services of Jersey Airways, British Air Navigation Co., and Portsmouth, Southsea and Isle of Wight Aviation respectively.

Mr. S. G. White, a New Zealander, started out from Heston early this week *en route* for Australia in the D.H. "Gipsy Moth" which the Hon. Mrs. Montague and her pilot, Mr. Rupert Belville, flew through Russia and the Middle East a little while back. Mr. White will fly *via* Naples, Brindisi, Athens, Cyprus, and Baghdad, and thence along the usual route through India.

The Leeds-Paris Service

Since the inauguration of their Leeds-Nottingham-Heston-Paris service in the second week of August, the number of paying passengers carried by London, Scottish and Provincial Airways, Ltd., has been increasing in a more than satisfactory manner. Only nine were carried during the opening week, but a month later the figure had risen to forty. Twenty-one were carried, incidentally, on one particular day.

Largely because arrangements at Le Bourget are so poor for the small operator, the figures on the Paris section are not very satisfactory, and it can only be suggested that L.S. and P.A., Jersey Airways, and Hillmans get together.

Despite some bad weather, regularity has been extremely good, for during the first twenty-eight days the figure was 98 per cent. on all journeys.

New Buildings at Germiston

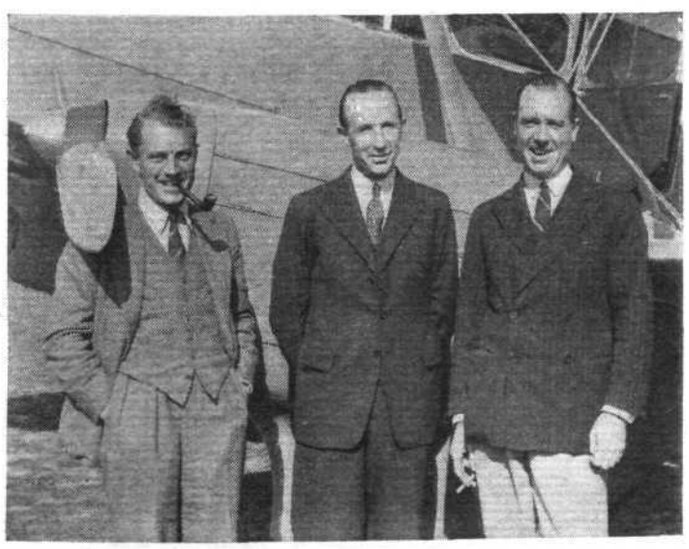
The air station at Germiston is to contain separate Customs, Immigration, Health, Traffic and Post Office sections, and there will be, in addition, three separate waiting-rooms for passengers, a large restaurant, administration offices, board room and control tower.

This building, which is expected to be completed next January, will cost, approximately, £22,000.

The roof will be flat, and will provide seating accommodation for as many as 5,000 people. The arrangements will include a public address system which will enable all officers to hear the announcements made by the Control Officer regarding aircraft movements. The control tower will be connected directly with the wireless station at the airport, which will obviate the present necessity for all messages to come through the Germiston Exchange. Wireless masts will be situated well away from the control tower and landing area.

An airman's clock, probably the largest in the world, will be installed in the front of the building. A loudspeaker telephone is to be constructed on the arrival and departure platform to enable pilots to speak direct to the Control Officer.

It is understood that the Government have also decided to erect a new meteorological station next to the administrative buildings, similar in shape and form to the present Rand Flying Club buildings. This will also be connected to the loudspeaker telephone.



AUSTRALIAN INTEREST: Major Norman Brearley, D.S.O., M.C., A.F.C (centre), Managing Director of West Australian Airways, Ltd., with Mr. F. E. N. St. Barbe of the de Havilland Aircraft Co. Ltd., and Major Hereward de Havilland, D.S.O., at Hatfield recently, where Major Brearley inspected some of the latest "D.H." types. (*Flight* Photo.)

Another Master Air Pilot

Four Imperial Airways pilots—Capts. Walters, Travers, Spafford, and Alcock—have now gained certificates as Master Pilots, the last being obtained by Capt. E. S. Alcock.

Capt. Alcock is a younger brother of the late Sir John Alcock, who made the first Atlantic flight in 1919. After a period of service in the Royal Air Force, Capt. Alcock joined Imperial Airways in 1929, and has now flown a distance of more than 750,000 miles.

Wireless on the Internal Routes

All Railway Air Services' machines are being fitted with Marconi wireless transmitting and receiving equipment, and several of them will carry the "homing" device as an aid to navigation. Those already equipped include the "Dragons" operating respectively on the Liverpool-Plymouth, the Birmingham-Cowes, and the Belfast-Manchester services, as well as the two D.H.86's on the London-Glasgow service.

The D.H.86's carry the new type A.D.41/42 transmitting and receiving equipment which has been adopted by Imperial Airways, Ltd., together with the "homing" direction-finder.

For the service between Croydon and Cowes which R.A.S. are operating in co-operation with Spartan Air Lines, Ltd., the Spartan "Cruisers" are being fitted with Marconi type A.D. 6M apparatus.

An Aberdeen-Glasgow Service

Aberdeen Airways, Ltd., recently inaugurated a twice-daily service between Aberdeen and Glasgow, using a Short "Scion" (two Pobjoy "Niagaras"). The machine leaves Aberdeen at 9 a.m. and 1.45 p.m., returning from Glasgow at 10.15 a.m. and 5.10 p.m., and the "termini" are Dyce Aerodrome, Aberdeen and Moorpark Aerodrome, Renfrew. The scheduled plying time is 1 hr. 15 min. in each direction, and the fares are £3 3s. single and £5 5s. return, including transport by road from the Caledonian Hotel in Aberdeen and the Kenilworth Hotel in Glasgow to the respective aerodromes.

Meantime the service does not permit of connections being made with the Aberdeen-Kirkwall air service or with the R.A.S. service from Renfrew to Belfast, Manchester, Birmingham and London

MODELS

A Section, Appearing Each Month, Devoted to the Progress and Development of Model Aeronautics

POWER-DRIVEN MODELS

On Sunday, August 26, the contest for the Sir John Shelley Cup took place at Fairey's Great West Aerodrome. This was a duration contest open to any model powered by other medium than rubber. Actually the five competing models were all powered with petrol engines, and it was evident that this class, though still in its infancy, had made good progress since the 1933 competition, when only one model took part.

The great thrill of the meeting came when, with a healthy roar of its "Atom Minor" engine, Capt. C. E. Bowden's "Blue Dragon" took the air. This machine, a highly tapered high-wing monoplane of 8ft. span, left the ground in about four yards, climbed rapidly in small circles, and was soon at an altitude of about 4,000 feet. After 12 min. 48 sec. the model was declared "out of sight," but the flight had won for Capt. Bowden the Sir John Shelley Cup. The following day "Blue Dragon" was found undamaged on a farm just beyond Staines.

Mr. F. Harris's 12ft. span high-wing "Flamingo II," fitted with an erstwhile model boat engine, the work of Mr. Harris, Senior, flew well, but at a lower altitude. His flight of 3 min. 42 sec. won him second place. Mr. J. W. Bishop's 10ft. span biplane "Endeavour," with 25 c.c. engine, secured third place with a flight of 3 min. 25 sec. The machine made for Heston, but turned and came overhead about 60ft. up, subsequently making a perfect landing outside the aerodrome.

Mr. B. K. Johnson's high-wing "Condor" enlivened proceedings considerably, the wing bracing collapsing at about 600 ft. The resulting dive broke the metal propeller and the carburetter, but failed to damage the A. E. Jones "Atom Minor" engine!

SEAPLANES

The contest for the Lady Shelley Cup was held at Danson Park on September 15. Of the twenty-two entrants, fourteen succeeded in getting a model off the water, quite a number "unsticking" in little more than their own length. The favourable weather enabled heights of 50-100 ft. to be reached, and only the presence of a belt of trees prevented several models putting up a duration of over a minute. The models had first to undergo a 30-sec. flotation test, and then the average of three flights was taken.

Mr. R. N. Bullock (S.M.A.E. and Blackheath Club) won first place with an average of 51.3. Mr. J. Worden (T.M.A.C.) came second with 43.6, and Mr. C. Gibson (North Kent M.F.C.) was third with 41.6. It is instructive to note that all three machines were tapered high-wing monoplanes, with three floats of the flat-bottomed "pontoon" type. The two-float models and those with V keels or stepped floats proved less satisfactory. Good take-offs and flights were also achieved with the gull-winged model of Mr. Fairlie (Wembley M.F.C.) and the tapered high wing of Mr. Bexley (T.M.A.C.). These two models also had three pontoon-type floats.

One flying boat, the work of Mr. Bianchi (S.M.A.E.), made its appearance. It had a short hull, with two small stabilising floats well in from the wing tips, a single tractor screw, and rubber enclosed in a tube carrying the tail. The machine had previously left the water with ease, but the owner had fitted smaller stabilising floats and narrowed the float-base, with the result that the boat refused to take off. However, some excellent hand-launched flights were achieved, the line-up appearing perfectly satisfactory.

The model seaplane is sadly neglected, probably owing to the scarcity of suitable ponds, but the interest of this year's contest seems likely to result in increased activity.

"MODEL ENGINEER" EXHIBITION

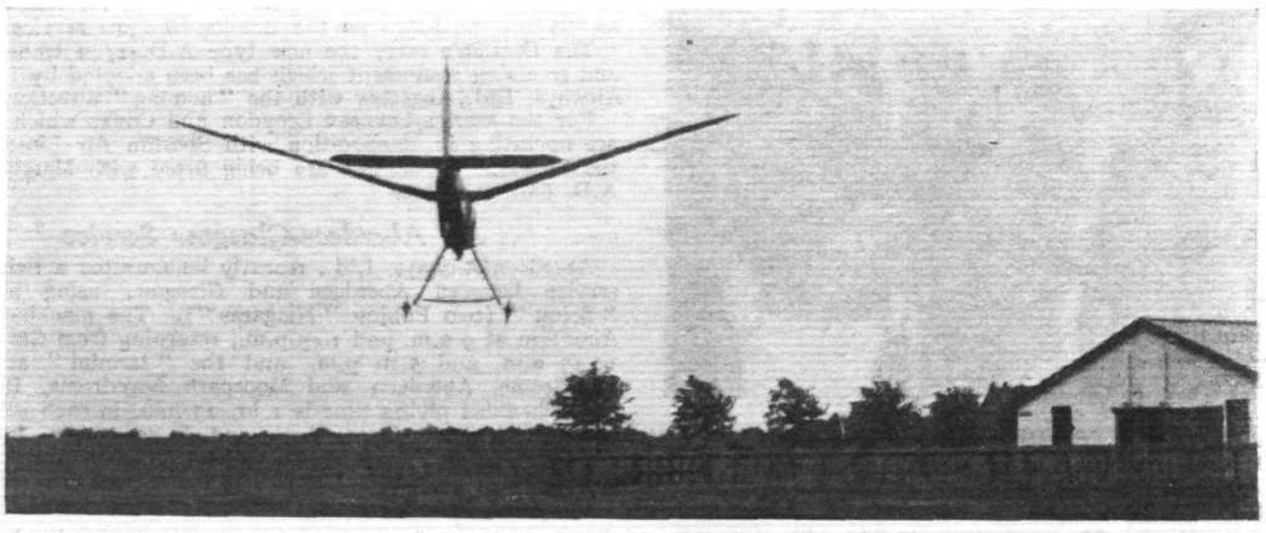
One of the big events in the world of model aeronautics is the annual "Model Engineer" Exhibition, which has just been held in the Horticultural Hall, Westminster. This year a particularly interesting and progressive range of models was on view. The stand of the Society of Model Aeronautical Engineers was dominated by Capt. Bowden's petrol-engined "Blue Dragon," spectacular winner of the Sir John Shelley Cup. Its achievements, recorded on a card just below, attracted considerable interest throughout the show. Another noteworthy exhibit was the wingless autogiro, with which Mr. H. C. Crow, of the Blackheath Club, has just achieved a flight of 15 sec. Mr. Rippon's Relay-action gear for models also attracted attention.

The Model Aircraft Club stand held examples of models powered by rubber, compressed air, petrol, and steam. The large pusher monoplane with "Atom Minor" 15 c.c. two-stroke, built by Mr. M. Gibson, occupied the central position and was flanked by sundry excellent scale models, including "Gull," "Hart," "Fury," and "Leopard Moth." Mr. Trevithick showed a strut-braced high wing, with a steam plant, the work of Mr. H. H. Groves, a pre-War steam enthusiast who has now emerged from his long retirement. Mr. Bray's model, shown uncovered, embodied an entirely original method of construction. The method of attaching the wing-ends to the stubs has, we are informed, proved sound in practice and should solve the problem of combining the essential flexibility with the modern method of fairing wings with fillets.

Messrs. A. M. Willis and N. Peters exhibited two short-hulled, gull-winged flying boats with twin tractor screws, and the rubber enclosed in tubes carrying tail plane and twin rudders. The best flight to date is 30 sec. General-purpose and duration types of models were well represented.

The Northern Heights Model Flying Club also had a well-stocked stand, with examples of general-purpose and scale models, wing construction, a rubber-driven pusher monoplane, and numerous interesting photographs.

M. R. K.

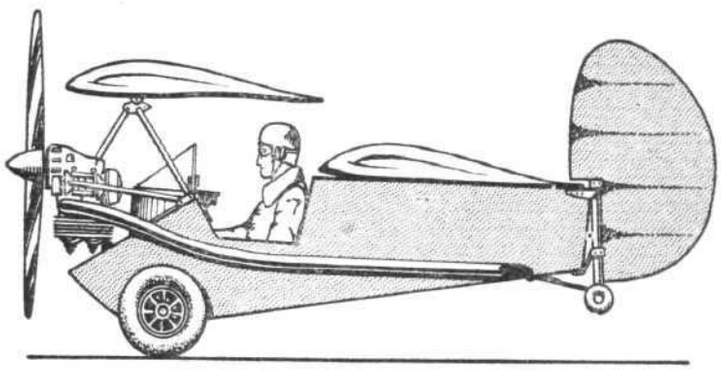


POWER DRIVEN: Capt. C. E. Bowden's petrol-engined ("Atom Minor") monoplane "Blue Dragon" concluding a successful flight.

SIMPLIFIED FLYING

A French Experimenter, M. Henri Mignet, has produced an Aeroplane, the "Pou-du-Ciel," which neither stalls nor spins

BEING the fourteenth which he has designed and constructed since the war, the latest product of the very active brain and hands of the French experimenter, Monsieur Henri Mignet, is not to be treated lightly, as the impractical endeavour of an aviation enthusiast to produce "something different." M. Mignet has persevered, and, after innumerable disappointments, he does appear to have produced a machine which, if not, perhaps, the last word, is, at any rate, a practical flying machine on which the designer has, up to the present, made flights totalling more than forty hours' flying and over eighty take-offs. Non-stalling and non-spinning qualities, coupled with simplicity of control, have been the ideals at which M. Mignet aimed. In his earlier models he did not quite achieve his object, but in his latest type, the *Sky Louse*, it would appear that he has evolved a practical solution.



Preventing the Spin

Spinning always seemed to M. Mignet to be connected with ailerons and aileron control, and when he came to design the *Pou-du-Ciel* he decided from the start that he would have no ailerons. If he had none, he argued, they could not very well get him into trouble. The decision was a drastic one, it will be admitted. Since the Wright Brothers first evolved wing-warping, and coupled it to the rudder control, aeroplanes have had lateral control, in most cases capable of being worked independently of the other controls. M. Mignet found, when looking around at other aircraft, that such things as kites, parachutes, and airships had no lateral controls. Why, then, he asked himself, should an aeroplane be compelled to use a form of control which was getting pilots into trouble? The ability of the other air-borne contraptions to do without ailerons was due solely to the fact that they had pendulum stability. The centre of gravity was below the centre of support. Very well, then, he would make his aeroplane so that its c.g. was below the centre of lift. A low position of the c.g. and a high position of the wing should do the trick. If his vertical surfaces, such as fuselage sides and rudder areas, were properly disposed in relation to centre of lift, dihedral angle, etc., that should suffice. After experimenting for some months, M. Mignet did get his fin areas so disposed that it was impossible to get his machine to do an incorrectly banked turn. He proved it by fitting a transverse bubble level. Any turn that could be made at any speed of which the machine was capable failed to budge the bubble more than about 2 mm.

And now what about the non-stalling qualities? M. Mignet argued that it was really rather absurd to fit an elevator which, if powerful enough to give him the control he wanted, would be capable of getting his wing into a stall. Well, let us do away with the elevator, he said. But we must have fore-and-aft control of some sort. What alternative is there? In the end, a wing arrangement was chosen which is somewhere between the heavily staggered biplane and the tandem monoplane. Actually, neither the one nor the other. The front wing is carried *en parasol*, the rear wing, which is also the tailplane and of smaller span than the front wing, lies on top of the fuselage. The trailing edge of the front wing is above the leading edge of the rear wing, and separated from it by a gap which is small if the arrangement is regarded as a biplane, but large if one looks upon the opening between the wings as a variable slot. M. Mignet states quite definitely that he does get a slot effect of sorts from the arrangement. The front wing is hinged to its supporting trestle, and fore-and-aft control is by altering the angle of incidence of this wing.

Simplicity of piloting is achieved by doing away with any foot control. The "joy-stick" is universally mounted as in the orthodox aeroplane. Fore-and-aft movement alters the incidence of the front wing, and thus performs the function of an elevator. The directional control, a large balanced rudder at the stern of the fuselage, is connected up to the joy-stick by cables in such a way that when the stick is pressed to the left, the machine turns to the left, with the appropriate bank for the turn, owing to the relative position of c.g., centre of lift and centre of side area. When the stick is moved to the right, the machine turns to the right in the same way. The throttle is the only other control.

Leading Particulars

A side elevation of the *Pou-du-Ciel*, reproduced by courtesy of our excellent French contemporary *Les Ailes*, shows the relative position of the wings. It does not show the unequal spans. From a photograph published in our contemporary, it appears that both wings have a straight centre-section of considerable span, and that the dihedral angle is obtained by slightly up-tilting the outer wing portions. The span of the front wing is 6 metres (about 20 ft.). That of the lower wing would appear to be about 12 ft. The overall length of the machine is 3.5 m. (11 ft. 6 in.), and the tare weight 100 kg. (220 lb.).

The engine fitted is an Aubier-Dunne two-stroke inverted two-cylinder air-cooled of 500 c.c. capacity. At 4,000 r.p.m. it develops 20 h.p., and continues to develop it. The airscrew is geared down, so that its maximum speed is 1,600 r.p.m. For prolonged climbing M. Mignet throttles down to an airscrew speed of 1,500 r.p.m., and when cruising at an airscrew speed of 1,350 r.p.m. with the throttle one-third open, the machine is, M. Mignet estimates, taking but 12 b.h.p. from the engine. He has had it up to 1,800 m. (5,900 ft.) in three-quarters of an hour, and his consumption (oil is mixed with the petrol) is 9 litres (2 gallons) per 100 km. (62 miles). A height of 12 metres (13 yards) is reached 250 metres (273 yards) from the starting point with no wind and from standing start. The machine cruises at about 100 km./h. (62 m.p.h.), and lands at 30 km./h. (say 20 m.p.h.). Materials for its construction cost M. Mignet 1,200 francs (not, of course, including the engine), and took him twenty-seven working days of ten hours each. This included the propeller, which is of beech wood and carved out of the solid chunk.

A very simple undercarriage appears to be used. The wheels are carried on short, straight axles hinged inside the fuselage, and under the tail there is a pair of small wheels, side by side, connected to the "bloaters" of the rudder. Steering on the ground is therefore easy.

BRITAIN AT COPENHAGEN

By M. P. ESKILDSEN*

AFTER the 2nd International Aircraft Exhibition in Copenhagen is over it must be admitted that from a Danish point of view it was a great success, as it was visited by approximately 15 per cent. of the entire population in Copenhagen, together with quite a few people from the other Scandinavian countries.

That the exhibition should attain such a result and create so much interest, not only in aviation circles but also among the Danish people in general, is in no little way due to the exhibitors. The President of the Exhibition Committee was quite right when, at the official banquet, he remarked: "To the exhibitors alone goes all the honour of this exhibition."

That part of the exhibition which caused most interest and demanded most attention—at least by all aeronautical experts—was the beautiful collection of modern, selected and valuable British exhibits arranged by the S.B.A.C., which gave the exhibition its character and constituted between one-third and one-half of the entire Aero Exhibition. The British exhibits, aeroplanes and aircraft engines, as well as instruments and accessories, constructional parts and models, were really extremely well selected, and throughout they were very instructive and of great interest.

The British stand was very well prepared and ably arranged by the skilful and energetic Secretary of the S.B.A.C., Captain H. R. Gillman, who was present personally from the time the doors of the exhibition hall opened till they closed, and who in a genial way, together with the excellent representatives of the various British firms, was always at hand and readily gave exhaustive and lucid explanations and answers to all technical questions.

Among the aeroplane demonstrations given at the Kastrup Airport must especially be mentioned the elegant, masterful and well-timed display by Flt. Lt. C. K. Turner Hughes with the A.W. "Scimitar." The performance and manœuvres of this machine in the hands of Mr. Hughes were magnificent, and created the greatest admiration among the spectators.

Also the two Airspeed "Couriers" with which Air Vice-Marshal A. E. Borton and Flt. Lt. Colman visited Copenhagen caused much sensation and enthusiasm, particularly of the few selected—among whom were H.R.H. Prince Axel—who had the privilege of trying out the machines in the air.

Possibly it was a disappointment to many that the direct controlled Autogiro C.30, which created such a sensation at the exhibition, was not demonstrated in the air; but there was certainly a great and genuine interest around this novel aircraft.

There is no doubt that this exhibition in Copenhagen has contributed a great deal to give the Danish people in general, and Danish aviation circles in particular, a good and lasting impression of the British aircraft industry's high standard, and that the bonds between this industry and the Danish aviation interests have been strengthened. For this result alone the Exhibition has not been in vain.

*Mr. Eskildsen is Chief Engineer of the Danish Naval Aircraft Works.

THE COLLEGE OF AERONAUTICAL ENGINEERING

Thirty-two students of the College have now obtained their Ground Engineer's X Licences. It may be of interest to note that Mr. J. G. Brown, Assistant Manager and Engineer at the Cinque Ports Flying Club, who won the Folkestone Trophy at the recent Lympne Meeting, was a student of this College, having completed his training in April last.

POBJOY ENGINES

Pobjoy Airmotors, Ltd., of Hooton, Cheshire, have just issued a folder concerning their "Niagara" type aero engine—a development of the well-known "R" type engine—a 7-cyl. air-cooled geared radial developing 84 b.h.p. at 3,200 r.p.m. Besides giving a specification and brief constructional description of the "Niagara," this folder also contains illustrations of the engine and of various Pobjoy-engined aircraft, and a list of Pobjoy achievements.

AIRCRAFT STEELS

We have received an interesting leaflet from the Aircraft Metals Department of Brown Bros., Ltd., of Great Eastern Street, London, E.C.2, showing microphotographs of aircraft steels taken at random from this department. These give a comparison of the analysis and physical tests of each type of steel with the official specification, and show the very great margin of purity which has been obtained, and is maintained, in the aircraft steels produced by Brown Bros., Ltd. By the way, we take this opportunity of drawing attention to the fact that the telegraphic address of Brown Bros., Ltd., is now "Imbrowned, Finsquare, London."

WRIGHTSON AND PEARSE AT CROYDON

The old Cirrus hangar at Croydon has been acquired by Wrightson and Pearse, who are starting an aircraft repair and maintenance service there. Up-to-date equipment has been installed and ground engineers who have held their license for not less than five years are employed for day and night servicing. Excepting in cases where an overhaul for C. of A. is required the company claim to keep a machine in service no longer than one day. From five to six days are required for overhaul for C. of A. "All-in" prices are quoted to operating companies for hangar accommodation and service.

NEW COMPANIES

INTERNATIONAL AIRCRAFT TRUST, 21, Panton Street, S.W.1. Nominal capital, £100 in 1s. shares. Objects, to experiment with, exploit, turn to account or deal with any inventions or rights relating to aircraft of all kinds, to manufacture and deal in aircraft and the component parts thereof; to establish, maintain and work in all parts of the world aerial transport and services, etc. The subscribers (each with 1 share) are:—Geo. Ogilvie Mitchell, 21, Panton Street, S.W.1, solicitor; Herbert Vanes, 21, Panton Street, S.W.1, solicitor's clerk. The first directors are to be appointed by the subcribers. Secretary (pro tem.) G. Ogilvie Mitchell. Solicitors: Norman Hart & Mitchell, 21, Panton Street, S.W.1.

YORKSHIRE AVIATION SERVICES, LTD. Nominal capital of £3,500 in £1 shares (500 5 per cent. cumulative preference and 3,000 ordinary). Objects: To establish and maintain a school of aviation, to carry on the business of air line, aerodrome and air port operators and owners, aeronautical engineers, designers, manufacturers and repairers of and dealers in aeroplanes, etc. The permanent directors are: Charles W. Croxford, "Southdene," Bedale, Yorks, retired naval officer. William K. Liversidge, 12, Wheatlands Road, Harrogate, aerodrome secretary. Solicitors: Emsley and Son, Atlas Chambers, Leeds.

INCREASE OF CAPITAL

R. K. DUNDAS, LTD., Aircraft manufacturers, etc., Airport, Portsmouth. The nominal capital has been increased by the addition of £5,000 in £1 ordinary shares beyond the registered capital of £10,000.

CHANGES OF NAME

WILTSHIRE SCHOOL OF FLYING AND COUNTY CLUB, LTD., High Post Aerodrome, Middle Woodford, Salisbury, Wilts. Name changed to the Wiltshire School of Flying, Ltd.

PUBLICATIONS RECEIVED

The Air Annual of the British Empire, 1934-35. Founded and Edited by Squadron-Leader C. G. Burge. Volume VI. Price 21/- net. London: Sir Isaac Pitman & Sons, Ltd.

League of Nations Armaments Year Book. Tenth Year, 1934. Price 25/- net London: Allen & Unwin, Ltd.

Sands, Clays and Minerals. Vol. II. No. II. Edited by A. L. Curtis. Price 3/6. post free. A. L. Curtis, Westmoor Laboratory, Chatteris.

Aeronautical Research Committee Reports and Memoranda. No. 1571. Distortion of a Stripped Two-spar Metal Wing under Torsional Loading. By D. Williams and H. F. Vessey. April, 1933. Price 1/- net. No. 1583. Wind Tunnel Tests on Junker Type Ailerons. By F. B. Bradfield and W. E. Wood. August, 1933. Price 6d. net. No. 1586. Stressing of a Fuselage under Combined Bending and Torsion. By A. G. Pugsley. June, 1933. Price 9d. net. London: H. M. Stationery Office, W.C.2.

Meteorological Office Professional Notes No. 66. Lightning and Aircraft. By G. C. Simpson. Price 4d. net. London: H.M. Stationery Office, W.C.2.

Statistica delle Linee Aeree Civili Italiane Anno 1933 (XII). Rome: Instituto Poligrafico Dello Stato Libreria.

Aeronautical Research Committee Reports and Memoranda. No. 1581. Stresses in the Fuselage Induced by Gusts. By H. R. Fisher. January, 1933. Price 1/- net. No. 1589. A Modified Chattock Gauge of High Sensitivity. By V. M. Falkner. January, 1934. Price 6d. net. No. 1592. Heavy Flexible Cable for Towing a Heavy Body Below an Aeroplane. By H. Glauert. February, 1934. Price 1/- net. London: H.M. Stationery Office, W.C.2.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1933

Published September 20th, 1934.

2112. G. G. BARKER (Bendix Aviation Corporation). Vehicle Brakes. (415,424).

5680. BENDIX AVIATION CORPORATION. Indicating-instruments such as altimeters and the like. (415,458).

5822. T. A. DENNIS & J. W. LYON. Means for operating synchronized mechanism controlling machine gun fire between aircraft propeller blades. (415,467).

10802. H. E. WIMPERIS. Bomb-sighting and navigational apparatus. (415,523).

20431. P. VERDIER. Ornithopters. (415,566).

34261. L. NETTER & F. BUESCHLER. Propelling-mechanism for aircraft. (415,622).